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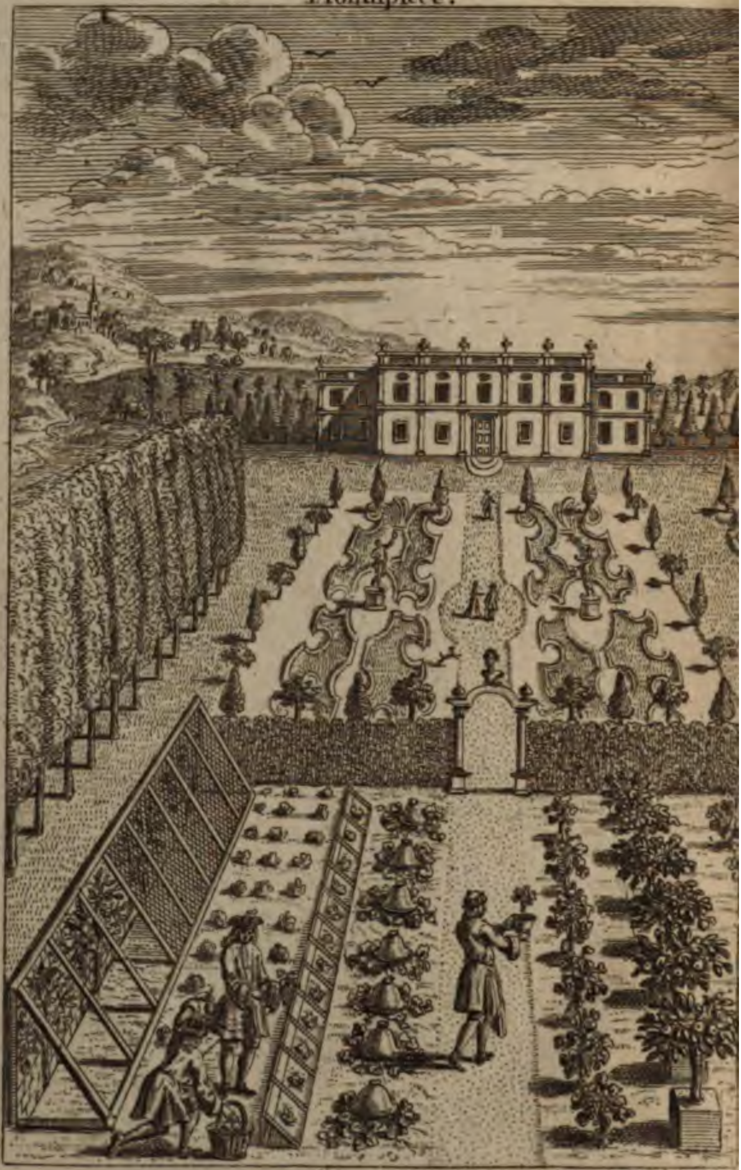

E.Kirkall fc

# NEW IMPROVEMENTS OF *Planting* and *Gardening*, BOTH Philoſophical *and* Practical.

In THREE PARTS.

I. Containing, A *New Syſtem* of *Vegetation*. Explaining the *Motion* of the *Sap*, and *Generation* of *Plants*. Of *Soils*, and the Improvement of *Foreſt-Trees*. With a new Invention, whereby more *Deſigns* of *Garden Plats* may be made in an Hour, than can be found in all the *Books of Gardening* yet extant.
II. The beſt Manner of improving *Flower-Gardens* or *Parterres*: Of Raiſing and Propagating all Sorts of *Flowers*; and of the Adorning of *Gardens*.
III. Of Improving *Fruit-Trees*, *Kitchen-Gardens*, and *Green-Houſe Plants*. With the *Gentleman* and *Gardener*'s *Kalendar*.

To which is added, that ſcarce and valuable TRACT, intitled,
HEREFORDSHIRE-ORCHARDS.

*Agite, O Adoleſcentes, & antequam Canities vobis, obrepat,* Stirpes *jam alueritis, quæ vobis, cum inſigne* utilitate, delectationem *etiam adferent.* P. Bellon. de negl. Stirp. cult.

*The* Seventh Edition, *with an* APPENDIX, *treating of ſeveral Matters omitted in the former Impreſſions.*

*Illuſtrated with* COPPER-PLATES.

By Richard Bradley, late Profeſſor of *Botany* in the Univerſity of *Cambridge*, and F.R.S.

*LONDON:*
Printed for *A. Betteſworth* and *C. Hitch* in *Pater-noſter-Row*, *J.* and *J. Pemberton* in *Fleetſtreet*, *J.* and *P. Knapton* in *Ludgate-ſtreet*, and *D. Brown* without *Temple-Bar*.
M.DCC.XXXIX.

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To the Moſt High, Puiſſant, and Moſt Noble PRINCE

# HENRY,

Duke, Marquis, and Earl of *Kent*, Earl of *Harrold*, Viſcount *Goodrich*, Baron *Lucas* of *Crudwell*, &c. Lord-Steward of His Majeſty's Houſhold, Conſtable of *Windſor* Caſtle, and Lord-Warden of *Windſor* Foreſt, Lord-Lieutenant, and *Cuſtos Rotulorum* of the County of *Bedford*, one of the Lords of His Majeſty's Moſt Honourable Privy-Council, and Knight of the Moſt Noble Order of the Garter.

*My* LORD,

YOUR Grace's Generous Encouragement of whatever may advance the Good of your Country, gave me the firſt Thought of inſcribing theſe Papers to your Great Name; and it is with Pleaſure that I mention your Grace's Permiſſion to make Uſe of that Patronage which my Ambition led me to. I am too well acquainted with your great Attainments in all kinds of Learning, to offer any conjectural Projects, or vain Hypotheſes, to ſo penetrating a Judgment; theſe Sheets are the Reſult of many Years Experience, the only Foundation which ſuch accurate Philoſophers as your Grace will allow for the Improvements of Natural Knowledge. It is a great Happineſs when Men of your exalted Quality and large Fortunes honour the Sciences, not only with your Protection, but by being Maſters of them, become their Ornaments. Thus, my Lord, you are to our Studies, in a way of Art, what the *Sun* is to the Subject of them in a natural way, which though placed at infinite Diſtance from the *Plants* of the *Earth*, yet by its Influence, gives them Warmth, Action, Life, and Beauty.

*May it pleaſe your Grace,*

Inſtead of enumerating the ſeveral Virtues of your Illuſtrious Houſe, and your own, which the Publick know already; I beg leave to congratulate my Country, upon the noble Spirit your Grace has always ſhewn in doing it the moſt important Services. The Men of Buſineſs, and the Men of Letters, the *State*, and the *Society* of Learning, are equally your Debtors. For my own Part, though the meaneſt among the latter, I ſhall endeavour, from your

Influence, to proſecute the Subject I have here begun with new Vigor, humbly hoping to approve myſelf what I moſt deſire to be thought,

*Your* GRACE's

*Moſt Obliged, and moſt*

*Obedient Humble Servant,*

**Richard Bradley.**

## THE

# PREFACE.

AS *there is no Subject of more general Uſe and Advantage than the Cultivation of Land, and the Improvement of the Vegetable World; ſo there is none which has been treated of more largely, and fallen under ſuch Variety of Pens of all kinds. The Publick, which is generally ſo good-natur'd on this Occaſion, as to accept and encourage any thing that looks towards the bettering their Fortunes, has never been ſo much baulk'd in their Expectations as in Books of Agriculture. The Reaſons of which are, that ſome of theſe Writers have beſtowed their Pains in collecting from Antiquity and Foreign Soils,* *and thought they had perform'd great Matters, by heaping together a Load of Obſervations from* Varro, *and* Pliny, *without carefully conſidering wherein their Experiments differ from the Genius of our* Soils *and* Climates. *Others have employ'd their time in copying from our old* Engliſh *Syſtems; and theſe have generally tranſcribed one another without the leaſt Acknowledgment of their Thefts, or adding one ſingle Improvement to the Knowledge of their Forefathers: And indeed, how ſhould it happen otherwiſe, when the Undertakers of this Subject have either been covetous or illiterate* Gardeners *and* Planters; *ſome, that if they knew any thing new or curious, had not the Spirit to communicate their Notions; and ſome that jogged on in the old beaten Track, without any Ambition to excel their Predeceſſors? We have now and then, it is true, a* Gentleman *ſtudious and capable of obliging the World, free from the narrow Views of Self-Intereſt, and employing his Hours for a more diffuſive Benefit than the Culture of his own private Eſtate or Garden; an* Evelyn, *a* Nourſe, *and a* Lawrence, *have given us ſomething equally new and juſt, built upon Experiment, upon the beneficial Subject of* Plantation: *But what are theſe, when*

*when compared to that uſeleſs Number of unimproving Authors?*

Apparent rari nantes in gurgite vaſto.

*For my own Part, I muſt confeſs that I have been a long time waiting for a* Compleat Syſtem *of* Agriculture, *and have read many a fair-promiſing Title, but have found nothing within but a barren Bulk of old Repetitions. This has excited me, who, from a natural Bent of Genius, even from my Childhood, have had a Paſſion for* Gardening *and* Planting, *to reduce all my Notions and Obſervations into a regular Form, and endeavour to ſupply this general, and ſo much lamented Defect of other Writers. I ſhall think, without Vanity, that I may do my Country no inconſiderable Service, if I can excite the Nobility and Gentry of the Kingdom to early* Plantations *upon their Eſtates, which, I ſhall prove, will not only redound to their own private Profit, but the Advantage of the Nation in general. The Diſuſe of this Method was complained of by Mr.* Evelyn, *who ſays very juſtly*, There is no Part in Husbandry which Men commonly more fail in, neglect, and have cauſe to repent of, than that they did not begin

Planting betimes. *And indeed ſuch Perſons who have been deaf to Demonſtration at the firſt Poſſeſſion of their Eſtates, and are afterwards convinced of the vaſt Advantages to be reaped by an early* Plantation, *either from the Experience of their Neighbours or themſelves, muſt have a very pungent Retroſpect upon this Occaſion. Every Man is naturally willing to enjoy the Profits of the Works (as one may call them) of his own Hands; and he therefore who begins at Fifty to be ſenſible that he has loſt many a fair Thouſand by his Neglect of improving his Eſtate between Twenty and his preſent Age, is to himſelf indeed a Loſer, but a Warning to others to avoid that Folly.*

*To begin then as methodically as I can, and take in all that relates to this Subject, I ſhall fairly tell my Reader what he is to expect in the following Sheets; and I hope he will pardon me if I mix a little* Natural Philoſophy, *ſuch as is plain, eaſy, and grounded upon my own Experience, with theſe Obſervations on* Gardening *and* Planting.

*I ſhall then advance (what I think) a new Syſtem of Vegetation, and endeavour to prove that the* Sap *of* Plants *and* Trees *circulate* *much after the ſame manner as the Fluids do in animal Bodies; which may be one Argument to ſhew the beautiful Simplicity of Nature in all her Works.*

*The* Generation of Plants *will next be conſider'd, and the manner how their Seeds are impregnated; a Diſcovery which I made ſome Years ſince: This will be of great Uſe to all* Planters, *by directing them in the proper Choice of their* Seeds.

*The Difference of Soils will make another conſiderable Article, what are natural to each Tree, and how all Kinds of Soils may be mended, alter'd, or improv'd, by proper Mixtures with each other; a Part of Huſbandry that has yet been but ſlightly touch'd upon, and yet the Whole depends chiefly upon it.*

*The Method of dreſſing of* Woods, *and making* Plantations *of* Timber-Trees, *naturally follows; wherein I ſhall propoſe a new, eaſy, and practical Way of raiſing Woods with very little Expence; which I hope will take off thoſe Fears which the Generality are taught to conceive of the preſent great Charge of* New Plantations.

*And*

# The PREFACE.

*And for the farther Encouragement of all Gentlemen, who propoſe an Advantage from their* Woods, *I ſhall add an Eſtimate of the Profits that will ariſe from an Acre of Land planted with* Timber *and* Underwood *in Nine Years, Seventeen Years, and Twenty-five Years after planting; which I ſhall prove will amount to above* 260 l. *beſide the* Timber *growing.*

*I ſhall then enter the Flower-Garden, and preſcribe the propereſt Methods for rendering that Part ornamental. In the firſt place, my Reader will find the Deſcription and Uſe of my Invention for the more ſpeedy Drawing or Deſigning of Garden-Plats; and I am of opinion, that when he once underſtands the right Uſe of it, I ſhall have thanks for that Diſcovery.*

*I have there given the beſt Method of Propagating and Introducing all the Ornaments of a Garden, as* Ever-greens, Flowering-Shrubs, Perennial *and* Annual Flowers, *and* Bulbous-rooted Plants, *with their different Heights, Beauties, and Times of Flowering. By theſe Means a Garden may have* always ſomething entertaining in it, while a ſucceſſive Scene of Delight is kept up by a due Regard to the peculiar Seaſon of each Flower.

There is one Particular which relates to this Subject, that could be no where ſo well introduced as here, i. e. the general Irregularity and Inconſiſtency of dead Ornaments in Gardens. I ſhall only hint at a few. Iron-Works are often placed where there are no Proſpects. We ſee many large Statues in ſmall Gardens, and a few ſmall ones in large Gardens. The Miſplacing of Ornaments in Gardens is another Fault, which is ſometimes ſo abſurd, as to equal the miſmanaged Picture in Horace:

> Delphinum *Sylvis* appingit Fluctibus
> *Aprum.*

Thus we view a Neptune in a dry Walk, and a Vulcan in the Middle of a Fountain.

Theſe are ſo ſhocking to common Senſe, that I think it ſufficient only to take a curſory Notice of them, to make them avoided.

# The PREFACE.

*In the next place, I am led to preſcribe ſuch Rules as are neceſſary for the Propagating and Managing of Fruit-Trees, as well againſt Walls as in Standards; and from thence proceed to lay down neceſſary Inſtructions for the ordering the* Kitchen-Garden; *and conclude, with directing the Culture of* Orange-Trees, *and tender* Exotic Plants. *To which I ſhall add, the* Gentleman *and* Gardener's Kalender; *wherein I have given, in a particular manner, ſome neceſſary Inſtructions for the Building of* Green-Houſes.

*Some very curious* Gardeners, *out of a Deſire (as I ſuppoſe) of improving themſelves in the Knowledge of Nature's Works, have objected againſt one Thing in particular, mention'd in my* New Improvements, Part I. pag. 6. *which relates to the Budding the* Striped Jeſſamine *upon the common Sort, and by that means making the whole Plant, or many Parts of it become ſtriped, from the unwholſome Tincture communicated to the Plant from the ſtriped Bud. This, they affirm, is not ſo as is related either by Mr.* Lawrence, *or myſelf; but I conceive their Objection rather proceeds from the Deſire they have to be convinced of the Certainty of the Thing,*

*Thing, than from any Ill-nature: Therefore, that I may not be wanting to them to give full Satisfaction of the Truth of what is alledg'd relating thereunto by the worthy Gentleman above-mention'd, as well as what I have alſo affirm'd concerning it, I refer them to the Garden of the ingenious Mr.* Whitmill *at* Hoxton; *where they may be Eye-witneſſes of Plants now growing, of the* Common White Jeſſamine, *which are variegated by the ſame Means, and after the ſame Manner, as is related in the* Clergyman's Recreation, *and my Book of* Gardening.

*Having now laid my Scheme before the Publick, I ſhall conclude this Preface with taking notice of the Indiſcretion which too many are guilty of, when they walk in fine Gardens, in gathering of Flowers and Fruits unſkillfully; which proves oftentimes prejudicial, either in the Loſs of the Seed of a good kind Flower, the Loſs of an Experiment, perhaps, or a Damage to the Tree the Fruit is torn from: And I the rather mention this publickly, becauſe many Gentlemen, who have fine Gardens, have often complain'd of this Breach of good Manners in their Neighbours, without being capable of redreſſing the Grievance they lay under. I am ſure no body can reaſonably* *take this amiſs from me, ſince every one muſt needs be ſenſible, this Inadvertency has many times deſtroy'd a valuable Plant, and given Uneaſineſs to a good Friend. This, I think, is a neceſſary Concluſion, ſeeing that all our Expence and Pains in making Gardens may be render'd fruitleſs, if ſuch Indiſcretions are continued.*

# NEW IMPROVEMENTS OF *Planting* and *Gardening*, BOTH Philoſophical *and* Practical.

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## CHAP. I.

### *A Parallel between Plants and Animals; with an Attempt to prove the Circulation of the Sap in Vegetables.*

VEGETATION, in whatever degree I ſhall treat of it, is equally depending on the Order of Nature. Whether I ſpeak of *Trees*, *Shrubs*, or *Herbaceous Plants*, their Principles are equally the ſame; that is to ſay, they all alike draw their Nouriſhment by way of their *Roots*: Which Nouriſhment is convey'd through proper Veſſels into the *Stem*, the *Branches*, *Leaves*, *Flowers*, and *Fruit*.

Now, that I may more eaſily explain by what Means every *Plant* receives and diſtributes its Nouriſhment to the ſeveral Parts of it, give me leave to draw a Parallel between *Plants* and *Animals*; that thereby the Nature of *Plants* may be the better underſtood.

The many curious Obſervations which have been made concerning the Structure of *Animal* Bodies, and what *Malpigius*, Dr. *Grew*, and myſelf, have remark'd in the Structure of *Vegetables*, may aſcertain to us, that Life, whether it be *Vegetable* or *Animal*, muſt be maintain'd by a due Circulation and Diſtribution of Juices in the Bodies they are to ſupport. We have all alike diſcover'd (with the help of *Microſcopes*) the ſeveral Veſſels and other Parts which compoſe a *Plant*; but I cannot agree in opinion with the Authors I have mentioned, concerning the Courſe of the Juices through the Ducts and Channels which we have diſcover'd. It would be needleſs for me in this place to relate their ſeveral Opinions, which would ſwell this Treatiſe to too great a Bulk; their Works may be peruſed by the Curious. I ſhall proceed to explain, that the *Sap* circulates in the Veſſels of *Plants*, much after the ſame manner as the *Blood* doth in the Bodies of *Animals*.

And that this new Syſtem may be the better underſtood, I think it proper in this place to give a ſhort Deſcription of the Veſſels in *Plants*, and their Situation. *Firſt*, then, the *Root* of a *Plant* is of a ſpungy Nature, ready to admit into it ſuch humid Particles as are fitted (in the Earth by a certain Temperature of Air) to be received into its Pores: And we may obſerve, that the various Qualities of different *Plants* depend chiefly on the different Size of the Pores in their *Roots*, by which they receive their ſeveral Nouriſhments.

*Secondly*, We muſt underſtand that the Wood of every *Plant* is compoſed of capillary Tubes running parallel with each other, from the *Root* (upright) through the *Trunk*. Theſe Cavities are generally ſo ſmall, that they are hardly to be diſcern'd by the natural Eye, unleſs in a Piece of Charcoal, Cane, or Oaken Board. Theſe Veſſels renew and augment themſelves every Year; as we may obſerve by cutting a Tree horizontally, which will diſcover to us the latitudinal Shootings, and the annual Additions of theſe Pipes, and for which reaſon the *Trunks* of *Trees* increaſe in their Circumference. Theſe Tubes, for Diſtinction ſake, I call *Arterial Veſſels*: For it is through theſe the *Sap* riſes from the *Root* in fine *Vapour*; for their Cavities are ſo ſmall, that it would be impoſſible they ſhould admit any thing, whoſe Parts were ſo large as thoſe of a *Liquor*.

*Thirdly*, The Paſſages or Pipes, by which the *Sap* returns downward, are much more open than the former, and are capable of receiving a Liquor into them. Theſe are placed immediately on the Outſide of the *Arterial Veſſels*, between the *Wood* and inner *Bark*, and lead down directly to the Covering of the *Root*. They perform the Office of *Veins*, and contain the liquid *Sap* which is found in *Plants* in the Spring and Summer Months.

*Fourthly*, The *Bark* of a *Tree* is of a ſpungy Texture, and by many little Strings which paſs between the *Arterial Pipes*, correſponds with the *Pith*. Theſe Pipes are ſo interwoven with one another, that they form a ſpunge-like Body, which together imbibes the Air, and thereby nouriſheth the Veſſels of the *Plant*, and keeps the whole Body in Health: And that this is the Uſe of this ſpungy Body, is certain; becauſe when we keep a *Plant* in a cloſe Place, or exclude the Air from it, it ſoon languiſhes, and turns pale, and makes ſmall Shoots; which are certain Signs of Sickneſs.

*Fifthly*, The *Pith* is compoſed of little tranſparent Globes chain'd together in like manner with thoſe Bubbles which compoſe the Froth of any Liquor.

In fine, a *Plant* is like an *Alembick*, which diſtills the Juices of the Earth. As for Example:

The *Root* having ſuck'd in the Salts of the Earth, and thereby fill'd itſelf with proper Juices for the Nouriſhment of the *Tree*; theſe Juices then are ſet in motion by the Heat, that is, they are made to evaporate into *Steam*, as the Matter in a Still will do when it begins to warm. Now, as ſoon as this *Steam* or *Vapour* riſes from the *Root*, its own natural Quality carries it upwards to meet the Air; it enters then the Mouths of the ſeveral *Arterial Veſſels* of the *Tree*, and paſſeth up them to the top, with a Force anſwerable to the Heat that put it in motion: By this means it opens (by little and little, as it can force its way) the minute Veſſels which are roll'd up in the *Buds*, and expand them by degrees into *Leaves*. Thus when we give a forcing Heat to the *Root* of a *Plant*, it grows quicker than when it has only a moderate Heat.

But as every *Vapour* of this kind, when it feels the Cold, will condenſe and thicken into a Water; ſo when the *Vapour* which I mention to riſe through the *Arterial Veſſels*, arrives at the extreme Parts of them, (*i. e.*) the *Buds* of a *Tree*, it there meets with Cold enough to condenſe it into a *Liquor*, as the *Vapour* in a Still is known to do.

In this form it returns to the *Root* down the *Veſſels* which do the office of *Veins*, lying between the *Wood* and inner *Bark*; leaving, as it paſſeth by, ſuch Parts of its Juice as the Texture of the *Bark* will receive, and requires for its Support.

It may be wonder'd at, that I have not taken more notice of the *Pith*; which has been always accounted the principal Part of a *Tree*: To which I ſhall only anſwer at this time, that many *Herbaceous Plants* have not any *Pith*; and that I have ſeen the *Trunks* of large *Trees* deſtitute of it, and they have yet continued to grow, and to bear *Fruit*; ſo that the Order of *Vegetation* may be explained without it. And indeed, was I here to take notice of the ſeveral Particulars in *Plants*, I might ſwell this Treatiſe into a large Volume: But I am clearly of the ſame opinion with him that ſaid, μέγα βιβλίον, μέγα κακόν· and therefore ſhall confine myſelf in this Work to ſuch Relations only as I hope may be uſeful.

But to proceed: The following Experiment of the moſt ingenious Mr. *Lawrence*, which he has mention'd in his *Clergyman's Recreation*, relating to the *Jeſſamine*, may convince us of the Certainty of the *Sap's* Circulation in *Plants*. I ſhall give it in his own Words: "Suppoſe a plain *Jeſſamine-*" *Tree* ſpreading itſelf into two or three *Branches* " from one common *Stem* near the *Root*: Into any one of theſe *Branches*, in *Auguſt*, inoculate a *Bud* taken from a yellow-ſtriped *Jeſſamine*, where it is to abide all Winter; and in " the Summer, when the *Tree* begins to make its " Shoots, you will find here and there ſome " *Leaves* tinged with Yellow, even on the other " *Branches* not inoculated, till by degrees, in " ſucceeding Years, the whole *Tree*, even the very *Wood* of all the tender Branches, will be " moſt beautifully ſtriped, and dy'd with Yellow

" Green intermix'd. He *adds*, That though the " inoculated *Bud* ſhould not ſhoot out, or that " it ſhould live but two or three Months, and " after that happen to die, or be wounded by " accident; yet even in that little time it will " have communicated its Virtue to the whole " *Sap*, and the *Tree* will become entirely ſtriped." And this Experiment myſelf and ſeveral others have made ſeveral Years ago: It gave me the firſt hint of the *Sap's* Motion, and put me upon farther enquiry. But for a more immediate Satisfaction in this Point of the *Sap's* Circulation, we may have recourſe to any one of the *Tithymels*, or milky *Plants*; and upon cutting their *Leaves*, we ſhall plainly diſcover the Veſſels through which the Milk flows to maintain the Life and Growth of the *Plant*.

The Motion of the *Sap* continues in a *Plant* as long as the Sun's Warmth can keep it in a fluid State, but is condenſed or thickened by a Winter's Cold, and is thereby changed into the Conſiſtency of Gum; and being thus ſtagnated, cannot move any more, till the Warmth of the following Spring, or ſome artificial Heat, rarifies it into its former liquid State.

It then renews its former Vigour, and puſhes forth *Branches*, *Leaves*, *&c.* But we muſt not ſuppoſe it is only the melted *Sap*, that does that Office of *Germination*; the *Root* has not been idle while the *Branches* have ſtood ſtill; it has not loſt the Moiſture of the preceding Autumn to impregnate and furniſh itſelf with proper Salts or Nurture, from whence the *Tree* is to be maintain'd: Here is a Supply laid in, to furniſh Food for the Summer, as ſome induſtrious *Animals* will do to nouriſh themſelves in the Winter.

In the next place, it may not be amiſs to confute a common Opinion, *That the* Sap *returns to the* Root *in* in *Winter*; for if it did ſo, how comes it, that *Trees* which are cut down in *November* and *December*, will put forth *Branches* and *Leaves* the following Spring, altho' they have no *Root* or Earth to feed them? This plainly ſhews, that the *Sap* is condenſed or thickened in the *Tree*, during its circulative Courſe, by extreme Cold, and remains in that gummy State, till the Warmth of the Spring (as I have already ſaid) liquifies it; and by the *Vapour* which muſt then ariſe from it, the *Buds* are puſh'd forth, ſo long as there is Matter ſufficient to furniſh them.

And now, ſince it appears from what has been ſaid, that *Plants* have a Circulation of *Sap*, and proper Means whereby to ſupply themſelves with *Food*, let us conſider whether *Plants*, in their ſeveral kinds, do not require different ſorts of *Food* one from another, like various ſorts of *Animals* which differ in their *Diets*.

*Firſt*, Then, *Land Animals* may be liken'd in general to thoſe *Plants* which are called *Terrene*, for that they live only upon the Earth; ſuch as *Oaks*, *Beech*, *Elms*, &c.

*Amphibious Animals*, ſuch as the *Otter*, *Beaver*, *Tortois*, *Frogs*, &c. which live as well on the Land as in the Waters, may be compar'd to the *Willow*, *Alder*, *Minths*, and ſuch others.

The *Fiſh Kind* or *Aquatick Race*, whether of the *Rivers*, or the *Sea*, are analogous to the *Water-Plants*; ſuch as *Water-Lillies*, *Water-Plantains*, &c. which only live in *Rivers* or *Freſh-water*: Or the *Fuci*, *Coral*, *Coraline*, &c. which are Sea or Salt-Water *Plants*; and not any one of thoſe will live out of its proper Element. From whence we may conclude how improper it would be to plant a *Water-Lilly* in a dry, ſandy Deſart, or an *Oak* at the bottom of the Sea; which would be juſt as unreaſonable, as if we ſhould propoſe to feed a *Dog* with *Hay*, or a *Horſe* with *Fiſh*. However, this Rule of Nature has been ſo little obſerved, even by ſome of our greateſt *Planters*, that we can hardly boaſt of good Succeſs in one out of five *Plantations* that have been made.

But I ſhall beg leave to remark yet farther, That as the ſeveral *Land-Animals* have their reſpective *Diets*, ſo have the *Terrene Plants* likewiſe their ſeveral Soils from * whence they draw their Nouriſhment; as ſome *Animals* feed on *Fleſh*, others on *Fiſh*, *Roots*, *Leaves*, *Grain*, or *Fruits*; ſo do we find that ſome Plants love *Clay*, others a *Loam*, *Sand*, or *Gravel*, &c. Nor is this all we ought to obſerve: We muſt conſider likewiſe how beneficial to every *Plant* is a right Expoſure, whether in a *Vale*, the Sides or Tops of *Hills* expoſed to the *South* or *North* Winds, whether inland, or near the Air of the *Sea*; for it is a proper *Air*, that keeps a *Plant* in Health, and fits it to receive its Nouriſhment. And a certain degree of *Warmth*, peculiar to each kind of *Plant* is likewiſe worth our enquiry; for it is a *Warmth*, natural to each *Plant*, that puts its *Juices* in their proper Motion. But this may be more fully explained in another place. In the mean while, I ſhall proceed to examine in the next Chapter, by what means *Plants* are capable of *generating*, and to explain the Uſes of that Diſcovery.

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* *Vide* Chap. III.

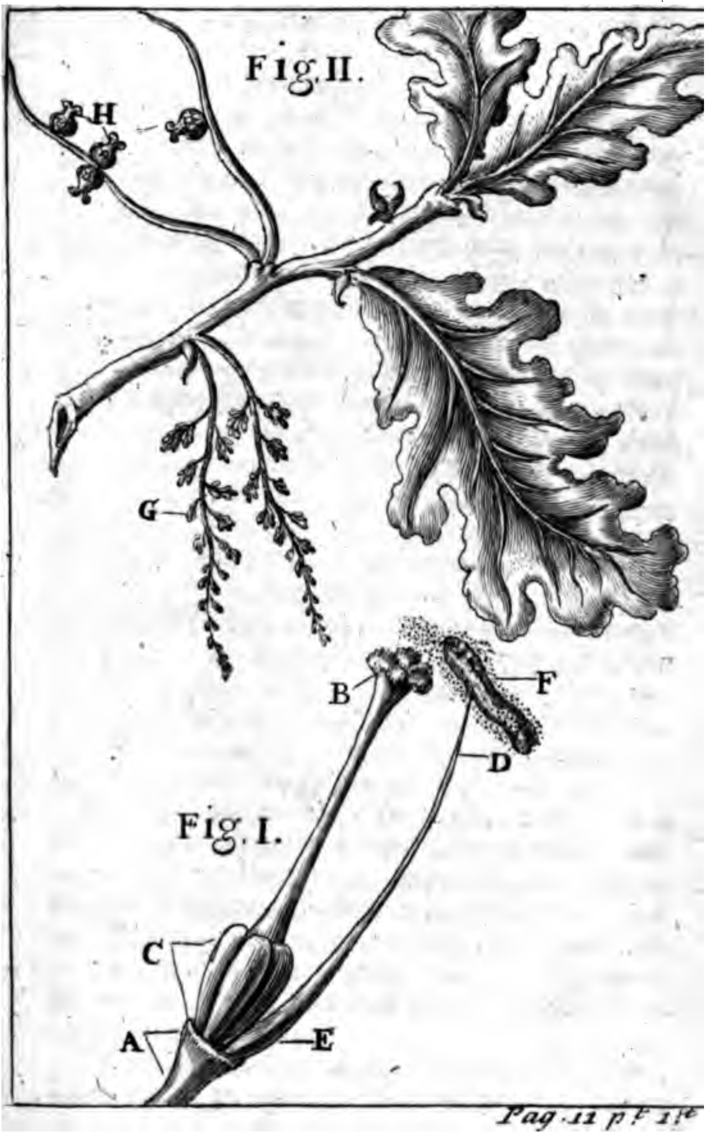
CHAP.

## CHAP. II.

## *Of the Generation of* PLANTS.

IN the foregoing Chapter I have given my Reader ſuch Hints as may ſerve to explain my *Syſtem of the Circulation of Juices in Vegetables*, and have endeavour'd to ſhew, that *Plants* are ſomewhat analogous to *Animals:* I ſhall now proceed to offer another Diſcovery, as new as the former, and depending on it, which I conceive will be of extraordinary Uſe to ſuch as raiſe Plantations from *Nuts*, *Maſt*, or any other kind of *Seed* or *Grain*. And altho' in this Treatiſe I have propoſed to give ſome Directions tending only to the Improvement of *Foreſt* and *Timber-Trees*, yet I hope to be excuſed, if in the Explanation of this wonderful Myſtery of the *Generation of Plants*, I ſhall be forced to introduce ſuch Kind of Plants as are not to be found in *Foreſts*, and to make ſome of my Experiments in the *Orchard* or *Kitchen-Garden*.

*Moſes* tells us, in his Account of the *Creation*, That *Plants have their Seeds in themſelves*; that is, every *Plant* contains in itſelf Male and Female Powers: The Text he has given us ſeems to be explain'd by this Diſcovery, and may lead us to conſider, that Plants, wanting *Local Motion*, require therefore this Union of *Sexes* in themſelves, by which Means they may generate without the Neighbourhood of other *Plants:* They are in this reſpect like *Muſcles*, or other immoveable Shell-fiſh, which are *Hermaphrodites* of this Kind, having their Propogation without the Help of one of the ſame Species. I mention *Muſcles* and other immovable



*Pag. 11 pl. 1re*

guard the Parts of Generation from the Injuries of the Weather; and as they are of no other Uſe that I know of, ſo it is not neceſſary that I ſhould place them in the Figure.

*B* is the Mouth of the *Piſtillum*, or Paſſage which leads into the *Uterus C*, in which are three *Ovaries* fill'd with little *Eggs* or *Rudiments* of *Seeds*, ſuch as we find in the *Ovaria* of *Animals*; but theſe *Eggs* will decay and come to nothing, unleſs they are impregnated by the *Farina Fœcundans* or *Male Seed* of the ſame *Plant*, or one of the ſame Sort.

From *D* to *E* is a *Stamen* of the *Lilly*, thro' which the *Male Seed* of the *Plant* is convey'd to be perfected in the *Apex F*, where, by the Sun's Heat, it ripens and burſts forth in very minute Particles like *Duſt*; ſome Particles of which *Powder* falling upon the Orifice *B*, is either convey'd from thence into the *Utricle C*, or by its Magnetick Virtue, draws the Nouriſhment, with great Force, from the other Parts of the *Plant* into the *Embryo's* of the *Fruit*, and makes them *ſwell*.

Now, that the *Farina Fœcundans* or *Male Duſt* has a Magnetick Virtue, is evident; for it is that only which *Bees* gather and lodge in the Cavities of their hind Legs to make their *Wax* with; and it is well known, that *Wax*, when it is warm, will attract to it any light Body. But again, if the Particles of this *Powder* ſhould be required by Nature to paſs into the *Ovaries* of the *Plant*, and even into the ſeveral *Eggs* or *Seeds* there contain'd, we may eaſily perceive, if we ſplit the *Piſtillum* of a *Flower*, that Nature has provided a ſufficient Paſſage for it into the *Uterus*.

In the firſt Figure I have only given a Deſign of one *Stamen* with its *Apex*, to prevent Miſtakes in my Explanation; but the *Flower* of every *Lilly* has ſix, of the ſame Figure and Uſe, which are placed round about the *Piſtillum*, or Female Parts; ſo that 'tis almoſt impoſſible it ſhould eſcape from receiving ſome of the *Male Duſt* (or *Farina Fœcundans*) falling upon it.

In this and other *Flowers* of the like Nature, the *Piſtillum* is always ſo plac'd, that the *Apices* which ſurround it, are either equal in Height with it, or above it; ſo that their *Duſt* falls naturally upon it. And when we obſerve it to be longer than the *Apices*, we may then conjecture that the *Fruit* has begun to form itſelf, and has no longer occaſion of the *Male Duſt*. And it is likewiſe obſervable, that as ſoon as this Work of *Generation* is perform'd, the *Male Parts*, together with the *Leaves* or *Covering*, fall off, and the *Pipe* leading to the *Uterus* begins to ſhrink.

We may farther remark, that the Top of the *Piſtillum* in every *Flower*, is either covered with a Sort of Velvet Tunick, or emits a gummy Liquor, the better to catch the *Duſt* of the *Apices*.

And now, as we may find in the Deſcription I have given of the *Lilly*, that the *Uterus* is within the *Flower*; ſo, on the other hand, the *Uterus* of a *Roſe* is without the *Flower*, at the Bottom of the *Petals* or *Flower-Leaves*. And likewiſe in *Fruit-Trees*, the *Cherries*, *Plums*, and ſome others, have their *Uricles* within their *Flowers*; and the *Gooſeberry*, *Currant*, *Apples* and *Pears*, on the Outſide or Bottom of their *Flowers*. But farther; altho' Nature has deſign'd the *Duſt* of the *Apices* to fecundate the *Female Parts* contain'd in the *Flowers* of *Plants*; yet we obſerve that in ſome *Plants*, the *Male* and *Female Parts* are remote from each other. As, for Example; the *Gourd*, *Pompion*, *Melon*, *Cucumber*, and all of that Race, have *Bloſſoms* diſtinctly, *Male* and *Female*, upon the ſame *Plant*. The *Male Bloſſoms* may be diſtinguiſhed from the others, in that they have not any *Piſtil* or Rudiment of *Fruit* about them, but have only a large

*Thrum* cover'd with *Duſt* in their Middle: The *Female Bloſſom* of theſe has a *Piſtillum* within the *Petals* or *Flower-Leaves*, and the Rudiment of their *Fruit* always apparent at the Bottom of the *Flower* before it opens: And ſo in like manner all *Nut-bearing*, and, I think, *Maſt-bearing Trees*, have their *Catkins* or *Male Bloſſoms* remote from the *Female Parts*.

The *Oak*, for Example, which bloſſoms in *May*, has its *Male Parts* diſtinct from the *Acorns*; we find Strings of little *farinaceous Flowers* in great Abundance, as in the ſecond Figure mark'd *G*, remote from the Rudiments of the *Acorns* or *Fruit*, mark'd *H*. And ſo likewiſe in the *Walnut*, *Cheſnut*, *Hazel*, *Pine*, *Cypreſs*, and even the *Mulberry*, *Aſpen*, and others. I have obſerved that ſome Sorts of *Willows* change their Sex every Year, by producing only *Male Bloſſoms* or *Catkins* one Year, and the other following, *Strings* of *Female Bloſſoms*, which, if they then happen to be near enough ſome *Flowering Male*, will produce *Seeds* not much unlike thoſe of an *Apocinum*.

When we view, with a good *Microſcope*, the *Male Duſt* of one ſingle *Plant*, we find every Particle of it to be of the ſame Size and Figure; but in ſome Caſes it is of two Colours, as in the *Tulip*, where it is Yellow and Blue; but as *Plants* differ from one another in their Figures and Qualities, ſo are the Figures of their ſeveral *Duſts* greatly different from each other: A Grain of the *Duſt* of *Geranium Sanguineum*, *maximo flore*, of *C*, *B*, *P*, is like a Bead of a Necklace with a Hole thro' it.

The *Farina* of the *Corona Solis perennis*, *Flore*, & *Semine maximis*, *Hort. Lugd. Bat.* is a Globe ſet with Thorns; that of the *Ricinus Vulgaris*, *C*, *B*, *P*, is of the Figure of a Grain of Wheat.

And the *Acer Montanum Candidum* of *C*,*B*,*P*, affords a *Duſt* of the Figure of a Croſs: And in like manner does the *Farina* of every *Plant* differ in its *Shape* from the reſt.

The Female Parts of *Generation* in *Plants* are beſt ſeen in large *Fruits*, without the Trouble of the *Microſcope*; ſuch as the *Fruit* of the *Pompion* or *Melon*, where, with the natural Eye, we may diſcover the *Veſſels* diſtinctly, which make the *Tunick* or *Covering* of each *Ovary:* We may ſee how the *Seeds* are join'd to it, and by what End they receive their Nouriſhment. And again, between the ſeveral *Ovaries* contain'd in that *Fruit*, we may very eaſily perceive the *Vagina*, or Paſſage, through which the *Farina Fæcundans* has paſs'd to impregnate the *Seeds*.

It may perhaps be objected againſt this *Hypotheſis*, that there are many *Flowers* which hang downwards, as the *Crown Imperial*, the *Cyclamen*, *&c.* and that their *Piſtils* cannot receive the *Farina Fæcundans* upon them: But if we obſerve that the *Piſtils* of theſe *Flowers* are always more prominent, or ſomewhat longer than the *duſty Apices* which ſurround them, we may eaſily conceive that the glutinous Matter and Velvet Covering on the Extremities of the *Piſtils*, may be capable enough of receiving and holding ſome of the Powder as it falls; and whether the Intromiſſion of the *Farina Fæcundans*, be requiſite or not, its Lodgment on the Mouth of the *Piſtillum* may, by Virtue of its attractive Quality, perhaps fecundate the *Seeds* contain'd in the *Uterus:* I am ſure, in the Production of *Animals*, there are yet greater Difficulties to encounter with; and it may be, if the *Analogy* between *Plants* and *Animals* was more enquired after by the Learned, they might diſcover many new Things which would be ſerviceable to the Preſervation and Benefit of *Animal Bodies*, as this Knowledge will be to the Improvement of the *Vegetable World*. We find, for example, that Trees are generally longer-lived than *Animals*, ſome of them living to four or five hundred Years; nay, we have ſome Accounts, by Tradition, of *Trees* that have lived above two thouſand Years: The Reaſon, I think, is plain; for that, 1*ſt*, *Trees* have no Senſation, (for it is my Opinion, that the Senſes prey abundantly upon the *Juices* of the Body they belong to.) 2*dly*, They always breathe the ſame Air: And, 3*dly*, They feed always upon the ſame *Diet*. And Mankind, who in the firſt Times is ſaid to have lived upwards of nine hundred Years, is ſaid to have fed upon a *ſimple Diet*, and to have drank of the *clear Stream*; at leaſt he had then but little Variety of Food. But I hope my Reader will pardon this Digreſſion of mine, it may perhaps put him upon greater Diſcoveries.

I ſhall now proceed to what I call the *Demonſtrative Part* of this *Syſtem*. I made my firſt Experiment upon the *Tulip*, which I choſe rather than any other *Plant*, becauſe it ſeldom miſſes to produce *Seed*. Several Years ago I had the Conveniency of a large Garden, wherein there was a conſiderable Bed of *Tulips* in one Part, containing about four hundred Roots: In another Part of it, very remote from the former, were twelve *Tulips* in perfect Health. At the firſt Opening of the twelve, which I was very careful to obſerve, I cautiouſly took out of them all their *Apices*, before the *Farina Fæcundans* was ripe, or any ways appear'd: Theſe *Tulips* being thus *caſtrated*, bore no *Seed* that Summer; while, on the other hand, every one of the four hundred *Plants*, which I had let alone, produced *Seed*.

But as a farther Demonſtration that *Plants* generate after the Manner I have endeavour'd to account for it, I ſhall recommend to my Reader the following Experiment: Make Choice of ſuch a *Plant* of the *Hazel* or *Filberd*, as you find to be in a bearing State, and far diſtant from any other of the ſame ſort: This *Tree* in *January* puts forth what are commonly call'd *Catkins*, which are long *Thrums*, compoſed of very ſmall *Flowers*, that towards the Beginning of *March* are covered with a fine *Duſt*, or *Male Seed:* 'Tis then the *Bloſſoms*, or *Female Parts*, appear on the *Buds* of the ſame *Tree:* They are very ſmall, and hardly to be diſcern'd without ſtrict Enquiry, only offering to the View a ſmall Cluſter of *ſcarlet Threads*, which are ſo many *Tubes* leading to the Rudiments of the *Nuts:* This happens at a windy Seaſon of the Year, that the *Male Duſt* may be more eaſily convey'd to the *Utricles* or *Female Bloſſoms* of the *Plant*. Now, as ſoon as the *Catkins* appear, they muſt be carefully taken from the *Tree*, and it will produce no *Fruit* that Year, unleſs you have a mind to ſingle out any particular *Bloſſom* of it, which may be impregnated with *Catkins* from another *Tree*, gather'd freſh every Morning for three or four days ſucceſſively, and duſted lightly over it, without bruiſing its tender *Fibres.* And in like manner may the *Bloſſoms* of any other *Tree* or *Flower* be *caſtrated*, and will have the ſame Effect.

By this Knowledge, we may perhaps alter the Property and Taſte of any *Fruit*, by impregnating the one with the *Farina* of another of the ſame Claſs: As for Example, a *Codlin* with a *Pearmain*; which will occaſion the *Codlin* ſo impregnated to laſt a longer time than uſual, and be of a ſharper Taſte; or if the *Winter Fruits* ſhould be fecundated with the Duſt of the *Summer Kinds*, they will decay before their uſual time. And it is from this accidental Coupling of the *Farina* of one with the other, that in an *Orchard* where there is Variety of *Apples*, even the *Fruit* gather'd from the ſame *Tree* differ in their Flavour and Times of ripening: And moreover, the *Seeds* of thoſe *Apples* ſo generated, being changed by that means from their natural Qualities, will produce different kinds of *Fruits* if they are ſown.

'Tis from this accidental Coupling, that proceeds the numberleſs Varieties of *Fruits* and *Flowers* which are raiſed every day from *Seed*. The yellow and black *Auriculas*, which were the firſt we had in *England*, coupling with one another, produced *Seed* which gave us other Varieties; which again mixing their Qualities in like manner, has afforded us, by little and little, the numberleſs Variations which we ſee at this day in every curious *Flower-Garden:* For I have ſaved the *Seeds* of near a hundred plain *Auriculas*, whoſe *Flowers* were of one Colour, and ſtood remote from others; and that *Seed* I remember to have produced no Variety. But, on the other hand, where I have ſaved the *Seed* of ſuch plain *Auriculas* as have ſtood together, and were differing in their Colours, that *Seed* has furniſhed me with great Varieties different from the *Mother Plants*. I believe I need not explain how the *Male Duſt* of *Plants* may be conveyed by Air from the one to another, by which this *Generation* and *Production* of new *Plants* is brought about; but I ſhall hint by the bye, to ſuch as plant *Orchards* for *Cider*, that they ought to plant only one ſort of *Apple* in thoſe *Orchards*; and that ſuch *Plantations* be likewiſe remote from other kinds of *Apples*, whoſe *Farina* would elſe certainly ſpoil the *Cider-Fruit*, by ripening ſome ſooner, and others later; which would occaſion almoſt a continual Ferment in the Liquor, and never permit it to ſettle or grow fine.

Moreover, a curious Perſon may, by this Knowledge, produce ſuch rare kinds of *Plants* as have not yet been heard of; by making choice of two

*Plants* for his Purpoſe, as near alike in their Parts, but chiefly in their *Flowers* or *Seed-Veſſels:* For Example, the *Carnation* and *Sweet William* are in ſome reſpects alike; the *Farina* of the one will impregnate the other, and the *Seed* ſo enliven'd will produce a *Plant* different from either, as may now be ſeen in the Garden of Mr. *Thomas Fairchild* of *Hoxton*, a Plant neither *Sweet William* nor *Carnation*, but reſembling both equally, which was raiſed from the *Seed* of a *Carnation* that had been impregnated by the *Farina* of the *Sweet William*. Theſe Couplings are not unlike that of the *Mare* with the *Aſs*, which produces the *Mule*; and in regard to *Generation*, are alſo the ſame with *Mules*, not being able to multiply their *Species*, no more than other Monſters generated in the ſame manner.

We may learn from hence, that the *Fruit* of any *Tree* may be adulterated as well by the *Farina* of one of the ſame ſort, which perhaps may be ſickly, and of a Dwarf-kind, as by the *Duſt* of ſome other kind near a-kin to it, and worſe than itſelf. Now, as ſuch Coupling may be very frequent in common *Woods*, ſo would I recommend the Choice of *Seed*, to be made only from ſuch *Plants* or *Timber-Trees* as excel in Greatneſs, or other good Qualities, and are far diſtant from others of meaner ſorts, which might degenerate their *Seeds*, and croſs our Expectations when they come to grow up; and this is as neceſſary to be obſerved among *Vegetables*, to maintain their good Qualities in the young *Plants* they are to produce, as it is in the Breeding of *Game-Cocks*, *Spaniels*, or *Running-Horſes*.

There is but one ſort of *Plant* that I know of which ſeems to be out of this Danger of coupling with other Sorts, and conſequently of either improving or diminiſhing the Qualities of its *Seeds*, and that is the *Miſletoe:* The Parts of its *Flowers* are indeed as apt to *Generation* as thoſe of other *Plants*; but I have never ſeen any Variety of this *Plant*, nor do I know any other nearly enough related to it to *ingender* with it; for whether we find it growing upon the *Oak*, *Willow*, *Lime*, or any other *Tree* whatever, the *Leaves*, *Flowers*, and *Fruit*, with its manner of *Growth*, are all alike. And ſince I have had occaſion to mention it in this place, give me leave to take notice of ſome Particularities belonging to it, as that it is neither to be propagated in *Earth* nor *Water*, but upon *Trees* and *Plants* only. The Ancients made it a *Super-plant* peculiar to the *Oak*, and tell us, that although it ſeemingly produced *Seed*, they did not believe that that *Seed* could poſſibly be made to *vegetate*; becauſe, I ſuppoſe, they had try'd it in the *Earth* without Succeſs. But as it is ſo frequently found growing on other *Trees*, beſides the *Oak*, in our Times, I ſhall take occaſion at once to overturn their Opinion in relation to this *Plant*, by ſhewing how it may be *propagated* from *Seed* upon any *Tree* whatever. About *Chriſtmas*, when the *Berries* are ripe, they may eaſily be made to ſtick upon the ſmooth *Bark* of any *Tree* you have a mind to *propagate* them upon, whether it be the *Oak*, *Aſh*, *Elm*, *Apple*, *Pear*, *Plum*, *Roſe*, *Gooſeberry*, or *Currant*, &c. The *viſcous Juice* which encompaſſeth each *Seed* will bind it faſt to the *Part* you place it upon; and with this ſmall Trouble you may expect young Plants the following Year, provided the Birds don't devour the Seeds you have ſown; therefore a Net would do well to ſecure them. I have ſeen twenty Plants of *Miſletoe* growing upon as many different ſorts of Trees and Shrubs in one Garden, which were *propagated* in the ſame manner I have mentioned. And I believe it would be very uſeful in correcting the too great Vigour of ſome *Fruit-Trees*, and bring them to bear, by taking from them the *ſuperabundant Juices*, which are always deſtructive to *Prolificity*, either in *Plants* or *Animals*.

And now, from the Account I have given of the *Generation* of *Plants*, we may learn why double *Flowers* ſeldom bear *Seed*; becauſe the *Duſt* of the *Apices* is too much crowded with the *Petals* or *Flower-Leaves*, which for that reaſon cannot eaſily reach the *Style* or *Piſtil* of the *Flower*, which is always prominent, and above the *Petals*, in full *Flowers*. It appears likewiſe, that the natural Properties of *Fruits* or *Seeds* may be changed by accidental Coupling with other *Plants*; and that the *Seeds* ſo alter'd may rob us of our Expectations in *Planting*, by having their Principles debauch'd by the *Duſt* of *diſtemper'd* and *degenerated Plants*.

To conclude: I ſhall give my Reader a View of the generative Parts of ſome *Plants* done with a *Microſcope*, which will yet explain to him ſome of the niceſt Particulars relating to the Subject of this Chapter.

*Plate* II. *Figure* I.

A the *Pedicle* or *Foot-ſtalk* of the *Tulip* Flower.
B the *Piſtillum* of the ſame.
C one of the *Stamina* taking root in the *Pedicle* of the *Tulip*.
D the *Apex*, or Head of the *Stamen*, which encloſeth the *Farina Fœcundans*, or *Male Seed*, in two Cells, which burſt open when they are ripe.

*Fig*. II. Shews the *Piſtillum* or *Uterus* of the *Tulip*, cut horizontally, and magnified with one of *Campani's Microſcopes*.

A the Cavity of the *Vagina*; the *Tunick* of which Paſſage or Cavity is compoſed of very ſmall Veſſels, which are continued into ſeveral Coats of the *Ovaries*, and the Eggs within them marked b b b b b b. All theſe Veſſels ſeem to take their riſe from three larger Pipes CCC, through which the Sap aſcends from the Root in Steam or Vapour.

DDD ſhew three large Veſſels, (whoſe Sap is in figure of ſmall *Globules* of a bluiſh Colour;) through theſe Veſſels the Sap deſcends in Liquor.

Theſe large Pipes put forth Branches of Veſſels about twenty times leſs than themſelves; which paſſing horizontally through the ſeveral *Ovaries*, are divided into ſmaller *Fibres*, and at length are loſt in the *Tunick* of the *Vagina*.—— Theſe are all of a pale-blue Colour.

EE direct to the fleſhy Part which ſeems to be made up of many tranſparent Protuberances, of a pale-yellow Colour, leſſening themſelves as they come nearer to the outward Coat of the *Piſtillum*.

*Fig*. III. Shews the *Piſtillum* or *Uterus* of the *Tulip* ſplit lengthways at A; wherein are diſcovered two of the *Ovaries* on each ſide the Paſſage of the *Vagina*.

B the *Apex* flinging out its *Duſt*, which falls upon C, the outward *Oſtium* of the *Uterus*, compoſed of ſpungy Folds, which emit a gummy Liquor.

D one of the *Petals* or *Flower-Leaves*, taking root on the *Pedicle*. *N. B.* This Figure is not magnified.

*Fig.* IV. Shews part of the *Piſtillum*, ſplit like that in the former Figure, but magnified.

A is the Cavity of the *Vagina*, into which the *Farina* is ſuppoſed to fall.

C is the Paſſage of one of the Veſſels marked C, in the ſecond Figure.

D D D D the Tunick of the *Ovary*, compoſed of many ſmall Fibres.

E the Eggs, as they are faſten'd to the *Ovary*.

F a ſlender Fibre paſſing lengthways through the *Capſula*, and ſeemingly binding the Eggs together.

*Fig.* V. Is the *Matrix* of the ſingle *Anemone*, ſurrounded with its *Stamina* and *Apices*. It is to be obſerved, the Eggs of this Flower are naked, ſtanding on the outſide of a little Button raiſed in the middle of the Flower.

*Fig.* VI. The Button with the Eggs on its outſide, ſplit lengthways.

*Fig.* VII. A is a *Stamen*, with its *Apex* of the *Anemone*, of its natural Size.

B, one of the Eggs or Seeds of the ſame, taken off from the Button.

*Fig.* VIII. The *Stamen*, with the *Apex* of the *Anemone* magnified. ——— In this Figure, at A, we ſee the Root of the *Stamen*.

B B B B the Length of the *Stamen* from its Root to the *Apex*, whereby it appears to be a hollow Tube.

C the *Apex* cover'd with its *Farina*.

*Fig.* IX. Shews us one of the Seeds or Eggs of the *Anemone* magnified; whoſe outward Coat is cover'd with capillary Veſſels, curl'd and running into one another, with a View of the Neck or Paſſage, into which the Male-Duſt is ſuppoſed to fall.

Thus I have endeavour'd to explain what I propoſed in the Title of this Chapter, *viz.* That *Plants* have a Mode of Generation ſomewhat analogous to that in *Animals.*

## CHAP. III.

## *Of* SOILS *proper for the Nouriſhment of* PLANTS, *and Compoſts for forwarding the Growth of* PLANTS.

IF *Plants* in their ſeveral degrees draw from the *Earth* ſuch *Aliment* as is proper for their Subſiſtence, and that as the Nouriſhment they receive is more or leſs ſuitable to them, ſo they proſper accordingly; they may then reaſonably infer, that there is a Circulation of *Sap* in *Vegetables*, in ſome reſpects like that of the Blood in *Animals*, as I have already endeavoured to ſhew in my firſt Chapter of this Tract: For, in *Animals*, it is very certain that a *Diet* is required by them; and that *Diet* being concocted, is the Matter from whence the Blood is drawn; and that as the Blood is, ſo is the State of the Body, either healthful, or diſtemper'd; then it reaſonably follows, that we ought as carefully to provide wholſome and natural Nouriſhment for the Welfare of each reſpective Plant

*Plant* we deſign to *propagate*, as we uſually do the proper *Food* or *Diet* of every Animal we have a mind to nouriſh. The Food of *Land Animals* is of three Kinds only, *viz. Fleſh, Herbs*, and *Seeds* or *Fruit*. So likewiſe the *Food* or *Terrene Plants* is of three Sorts; *Sand, Loam* or *Mother-Earth*, and *Clay*, in their ſeveral Degrees: And as the ſeveral Kinds of *Fleſh*, the various Tribes of *Herbs*, and the many different *Fruits*, have each their reſpective *Animals* to feed upon them; ſo *Sand* in its ſeveral Degrees, *Loam* of different Sorts, and *Clays* of all Kinds, have certain Proportions of *Salts* in them reſpectively, proper for the Nouriſhment of every *Plant*. *Fruit* or *Seed*, I eſteem to be the *Medium Nouriſhment* between *Fleſh* and *Herbs*; and we find that every Land *Animal* will feed upon it, although their natural Food is either *Fleſh*, or *Graſs*. As for Example: A Horſe, whoſe proper Food is Graſs, will eat Grain; and ſo Dogs, and other Creatures who feed upon Fleſh, will eat Fruit. And I am of opinion, that the *Salts* therefore of *Fleſh, Fruit*, and *Herbs*, are the ſame, only differing in the Proportion of their Quantities; that is, one Pound Weight of *Fleſh* may perhaps contain twice as many *Salts* as the like Weight of Grain or Seed; and one Pound of *Grain* twice the *Salts* as may be found in Herbs or Graſs. Now, that all theſe *Salts* are proper for *Vegetation*, is evident by the common Practice of burying *Straw* or *Litter, Brakes, Halm*, and ſuch-like, to enrich ſome *Soils*. Again, if *Fruits* and *Grain* be well conſumed, one Load of it laid upon a Spot of Ground, will enrich it more than ten Load of Horſe-litter or common Dung, ſays Sir *Hugh Platt* from Experience: And we are very ſenſible of the prodigious Effect of *Carrion, Leather*, or any Parts of *Animals* apply'd to the Roots of *Vegetables*.

So, on the other hand, in natural Soils, what I call *Loam* or *Mother-Earth*, I ſuppoſe to be the *Medium* between *Sand* and *Clay*; that is, an Earth of a certain Temperature partaking equally of them both. And indeed, all Soils that I know of may be reduced under theſe three general Heads, *viz.* *Sand*, *Loam*, and *Clay*; for all others, although they may bear different Names, are in ſome reſpect depending upon one or other of theſe. *Gravels*, and all the open *Soils*, till we come to the *Loam* I mention, are of the *Sandy* Race; and the binding *Earths*, from *Loam* downwards, till we come to the Stiffneſs of *Chalk* itſelf, may be ranged with the *Clay* Kind. I find all theſe *Soils* are alike tending to *Vegetation*, and have their *Salts* proper for it, but in different Proportions of Quantity; that is, a Peck of *Clay* has perhaps twice as many *Salts* in it, as the ſame Quantity of *Loam*; and that Quantity of *Loam*, twice as many *Salts*, as the ſame Proportion of *Sand*. Now, from this Argument of mine, it may ſeem at firſt view, that *Clay* is the moſt proper *Soil* to forward the *Growth* of *Plants*; whereas we know that *Sand* is much more apt to produce *Plants* quicker than any other Soil: But give me leave to explain this Paradox. *Clay*, whoſe Parts are cloſely wrought together, will not eaſily give out thoſe *Salts* contained in it; neither can the tender *Fibres* of every *Plant* make their way thro' it in ſearch of their Nouriſhment: But if we open its Parts, by digging and breaking it into ſmall Particles, and keep thoſe Parts open by a Mixture of ſome ſharp *Sand*, or other Body of the like nature, we ſhall not fail to ſee the Effects of its Vigour.

On the other hand, *Sand* is apt to puſh forward the *Plants* growing upon it early in the Spring, and will even cauſe them to *germinate* near a Month ſooner than the *Plants* growing upon a *Clay*: The

Reaſon is, that the *Salts* in a *Sand* are at full Liberty to be raiſed and put in Motion, upon the leaſt Approach of the Sun's Warmth: but then as they are haſty in their Work, ſo are they ſoon exhaled and loſt.

The Clay has certain *Plants* growing upon it, which are natural to it, and conſequently thrive better in it than in any other *Soil.*

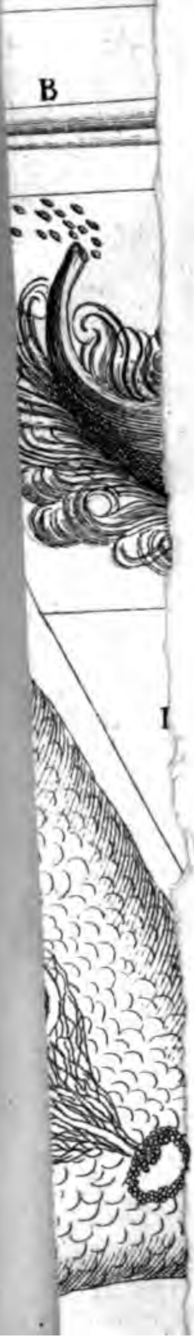
And the *Sand* likewiſe has its natural *Plants*, which delight in it, and will not equally proſper in any other *Earth.*

However, both the *Clay Plants*, and thoſe of the *Sand*, will grow in the *loamy Soil* I have mentioned, for that it partakes of the Qualities of *Sand* and *Clay*, as Grain doth of *Fleſh* and *Herbs*, in reſpect to the *Food* of *Animals.*

I might here take Notice that the Word *Loam* is variouſly received, and underſtood by Planters. Some mean by it the moſt common ſuperficial *Earth* met with in *England*, without any Regard to the Proportions it bears of *Sand* or *Clay*. Others would have it more inclining to *Clay* than *Sand:* However, I ſhall endeavour to avoid all Diſputes that might ariſe concerning it, by once more repeating, that when I ſhall have Occaſion to mention it, I mean only that Degree of *Earth* which equally partakes of *Sand* and *Clay.*

This *Earth* then, which I call *Loam*, may either be of a black, or yellow Colour; but let it be either the one or the other, Experience ſhews us the *Plants* of all Sorts will grow in it; and, for the Reaſons I have before mentioned, it appears to be a more beneficial *Soil* than any other, whereever it happens to be found.

Now, as I take it, ſeeing that *Loam* is ſo happy in its Productions, that even *Plants* naturally bred in different *Soils* will thrive in it, it then ſeems reaſonable, that if by Mixtures of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*Natural Earths* one with the other, we make ſuch a Compoſt as may nearly imitate it, we may expect far greater Succeſs from a Mixture of that Sort (eſpecially in *Plantations* of durable *Trees*) than any Compoſition we can deviſe to be made with *Dungs*, or other forcing Ingredients. For it is very well worth our Remark, that *Animals*, and *Vegetables* alſo, of all Sorts, are more laſting, as they are fed by ſimple and natural *Diet*, as I have hinted before. It is true, *Hot-beds*, or any other Means of the like Nature, would indeed forward the *Growth* of *Trees*, perhaps as much in one Year, as Nature of herſelf would do in ſix; or, as Dr. *Agricola* of *Ratiſbonne* pretends by his artificial Compoſt to raiſe *Foreſt-Trees* to exceed the Height of Twenty Foot in a few Days time: But we may be aſſured they can never laſt out half their Days, for we find the ſame in *Animals*, but particularly in *Mankind*, who by Exceſs of unnatural *Foods*, and invigorating *Liquors*, ſhortens his Life; while on the other hand, ſuch Men as have bare Subſiſtence, and are forced through Neceſſity to live upon the natural Food of their own Country, are long-lived. I therefore would adviſe, as well from what I have ſaid, as from the Obſervations and Inquiries I have made of the *Growth* of *Timber-Trees*, that they may not be forced by any violent Means, if we deſign them to laſt long, and improve themſelves to be valuable; neither to take them from a Nurſery of rich Ground, and expoſe them afterwards in ſuch *Land* where they may want the ſame Plenty of Nouriſhment they have been uſed to; for then they would certainly decline and deceive us. Let the Earth we deſign to plant them in, be freſh and well open'd in its *Parts*; and if it ſhould be ſifted, it will help the ſtriking of young *Roots* at firſt planting, and ſupport them till they can gather *Strength.*

I think I need not farther explain, that equal Quantities of *Sand* and *Clay* well mix'd together will afford us the deſirable *Soil* we ſeek after, in caſe the *Loam* or *Mother Earth* I mention cannot conveniently be met with. But this has its greateſt Uſe, when we make new *Plantations*; for we ought alſo to examine the Depth of the *Soil* underneath, into which our *Trees* are afterwards to puſh their *Roots*, and from whence they are to draw their chief Nouriſhment, and that may be beſt known from Obſervation; that is, by examining the moſt vigorous *Trees* of every Kind, and obſerving the *Qualities* and *Depths* of the *Soils* they feed from, and from ſuch Examples to make our *Plantations* accordingly; we ſhall then find that an *Oak* will never make good *Timber*, if it be *planted* or *ſown* upon a ſhallow rocky *Soil*; and at the ſame time, that an *Aſh* will grow there; but this I ſhall more fully explain in the next Chapter of *Foreſt-Trees.*

And now, ſeeing that ſome delight more in the quick *Growth* of the *Trees* they plant, than the Advantages which would accrue to their Families, from a regular and natural *Growth* of their *Plantations*, I ſhall mention ſome *Mixtures* which have been experienced to forward the *Growth* of *Trees.*

*Mixture the firſt.* If the *Soil* be ſtiff, inclining to *Clay*, let it be well broke and open'd, of which take about five Load; add to it an equal Quantity of *Heath Turfs* burnt; let theſe Ingredients be well mixed and ſifted, or ſkreen'd together, after they have lain for a Winter in a *Heap* or *Ridge*. This Compoſt will forward *Trees* extremely.

*Second Mixture.* To four Load of *ſtiff Soil* broke and open'd as before, add as many Load of *ſharp Sand*, to which put two Load of the *Aſhes* of *burnt Furzes*, *Gorſe*, *Fern*, *Weeds* or *Wood*; let this be well mix'd together about *September* or *October*, and be laid up in a *Ridge* till the *February* following, to be ſkreen'd or ſifted for Uſe. Sir *William Bruce*, a Gentleman of *Scotland*, made uſe of the like *Mixtures* in his Garden, with the Succeſs he deſired.

*Third Mixture.* One Load of *Rotten Wood*, ſuch as may be found under a Wood Pile, or for want of that, the ſame Quantity of *Rotted Leaves.* To either of theſe add a Load of *burnt Graſs Turf*, two Load of *Sand*, and the like of *ſtiff Soil*; this Compoſition muſt be well mix'd and laid in a *Ridge* from *October* till *February*, and be ſifted for Uſe. *N. B.* Theſe artificial *Soils* ſhould always be compoſed about *October*, and ſifted the following Spring juſt before you uſe them; for if you ſhould prepare them in the Spring, the Summer's Heat would exhale their *Volatile Spirits*; and beſides, *Weeds* would be apt to rob them of their Nouriſhment, unleſs they were to be made in ſome ſhady Place under *Trees.*

*Fourth Mixture.* Take the Quantity of a Load of *Rape Seeds*, after the *Oil* is preſs'd from them, which may be very eaſily had at the *Rape Mills* at a ſmall Expence; add to them two Load of *Sand*, one of *ſtiff Soil*, and one of *burnt Heath*, or *Graſs Turf*, prepared as the others, and ſifted, will greatly forward the *Growth of any Plant.*

*Fifth Mixture.* Take one Load of *Malt Grains* (after Brewing) add to it two Load of *Sand*, and two of *ſtiff Soil*, mix'd and prepar'd as before; it will make an incomparable Compoſt to haſten the *Growth* of *Plants.*

*Sixth Mixture.* *Sheeps Dung*, with a like Quantity of *Wood-Aſhes*, and twice as much *Loam*, or *Mother Earth*, prepared as before, will greatly forward the *Growth* of *Herbs* and *Trees.*

*Seventh Mixture.* Take of *Horſe-Dung*, well conſumed, two Load; add to it one Load of *Turf Aſhes*, two Load of *Sand*, and two of *ſtiff Earth*; prepare this *Mixture* as before, and it will greatly forward *Germination* of *Plants:* But if *Sea-Coal Aſhes* are more eaſily found, put them in the Place of the burnt *Turf*, and then add one Load more of *ſtiff Earth* to the Compoſt.

And now, beſides the ſeveral Compoſitions which I have ſet down, I might add thoſe which I have known to have been prepared with the *Soil* of *Poultry*, that feed upon Corn or Grain. I found thoſe Ingredients very hot and full of Salts, greatly tending to *Vegetation*, and abundantly quicker in their Operation than the *Soil* of *Animals*, which only feed upon *Herbs*; but that is no great Wonder, if it be true, what Sir *Hugh* firſt, that a *Preparation* of natural *Soils*, anſwerable to the *Loam* or *Mother Earth* I have mention'd, is certainly the beſt for all Sorts of *Foreſt Trees* to be *planted* or *ſown* in, if we deſign them to make good Timber; and if it is rather deſired that ſuch *Trees* ſhould grow quick, and conſequently be ſubject to decay early, or be prejudiced by *Blights*, I have made mention of ſuch forcing *Compoſts* as will ſet them forward in their *Growth*, but in my Opinion might be better employ'd in Gardens for the Production of ſhort-lived *Plants*.

# CHAP. IV.

## *Of* Timber-Trees, *and* Underwood: *Of Felling of* Timber; *and Dreſſing and Cleaning of* Woods.

### SECT. I.

### *Of TIMBER TREES.*

AS there is nothing which contributes more to the *Honour*, *Beauty*, and *Welfare* of an Eſtate, than timely and ſufficient *Plantations* of *Timber Trees*, ſo I have choſe to make the *propagating* of *Timber* my preſent Subject; and what I have ſaid in the former Chapters may, I hope, contribute ſomething towards our Succeſs in the Undertaking, which will ſo greatly contribute to the Welfare of every Man of Eſtate, if it be rightly underſtood. For altho' a Gentleman may perhaps be poſſeſs'd of a plentiful Fortune, ſuppoſe of 10,000 *l. per Annum*, he ought certainly to conſider, that in Proceſs of Time he muſt provide Fortunes for Children out of that Eſtate, proportionable to his Honour. And again, his Children muſt likewiſe make farther Proviſions out of their ſeveral Parcels for their Iſſue, and ſo on, till at length, in ſix or ſeven Generations, we ſhall find the Paternal Eſtate cut to Pieces, into ſo many little Shares, that there will hardly remain any Idea of the plentiful Stock of their Anceſtors. Now, I ſay, it would certainly be a Token of great Wiſdom, for every Gentleman of Fortune, not only to conſult all proper Means, how to maintain the Bulk of his Eſtate entire, but continue it ſo in his Line, wiſely guarded againſt the Hazards of Fortune, and even the natural Conſequences I mention, by timely and neceſſary *Plantations* upon it, which would be ſo many Monuments of his Wiſdom and improving Treaſuries for the Good of his Poſterity: And beſides, how beneficial would ſuch *Plantations* be, in caſe of extraordinary Accidents, the Profuſeneſs of a young Heir, the Diſcovery of Iron or Lead Mines, where Wood is of ſuch extraordinary Uſe; or for the raiſing a Sum of Money upon any Emergency? I may add likewiſe, beſides the private Intereſt of the Proprietor, it would be of general Uſe, and for the Nation's Good. How happily is *England* ſituated for Trade? What Benefits doth ſhe receive from her Shipping? And therefore how profitable and uſeful is her *Timber?* which will yet become more valuable than ever, in that ſo much is continually cut down, and very little Care taken to make new *Plantations* for future Benefit. In a word, the preſent State of *Timber* in *England* is ſo very inconſiderable, in reſpect to the great Uſe made of it, and even that which remains growing is generally ſo much neglected in its Culture, that I hope ſome Directions for its Improvement may not be unacceptable to the World.

The *Trees* which have been commonly propagated in *England* for *Timber*, are the *Oak*, *Aſh*, *Beech*, *Elm*,

*Elm*, *Cheſnut*, and *Walnut*: Theſe are of the upper Claſs; and we may add to them the *Ilex*, or *Ever-green Oak*.

Of the lower Rank, for *Underwood*, or more indifferent Uſe, are the *Hazel*, *Alders*, *Willows*, and and ſome others of leſs note.

The *OAK*, like all other *Plants*, has its Varieties; which are taken notice of by the *Botaniſts*. I have obſerved about five Sorts in *England*; but I ſhall only recommend two Kinds of them to be planted for *Timber*. The firſt and beſt in my Opinion is the *Upright-oak*, which grows more erect than any other; and the ſecond is the *large Spreading-oak*. We have many Inſtances of theſe Kinds that have attain'd to ſuch prodigious Greatneſs of Stature, that the *Timber* alone of one Tree has been ſold for upward of 50 *l*. The *Oak* doth not only afford us the moſt ſerviceable *Timber* for naval Architecture, but alſo for other Building. Its *Bark* is uſeful to *Tanners*, and the *Oak* is therefore cut down about *April*, when its *Bark* will peel. The *Acorns* are excellent Food for Hogs. This Tree delights in moiſt Ground of a good depth, and will proſper in the coldeſt *Clay*, and, as Mr. *Evelyn* ſays, in Gravel alſo. It is noted likewiſe, that ſome *Oaks* having been ſown in Hedge-rows, have in the ſpace of 30 Years born a *Stem* or *Trunk* of a Foot diameter. I have myſelf ſeen ſome ſeedling *Oaks* of 20 Years Growth of near that Subſtance, which had never been removed from the Place where they were ſown; and I would adviſe, that every Plantation of *Oaks* be ſet from *Acorns* on the very Spot where they are to remain; and that we are likewiſe careful to chuſe our *Acorns* from thriving, vigorous Trees, for the Reaſons I have before mention'd. The Diſtance between them ought to be about 33 Foot, and the ſaid Space between the *Oaks* ſhould be interſown or planted for *Underwood*, as I ſhall direct in the following Chapter.

Of the *A S H* there are two Sorts (falſely diſtinguiſhed by the Names of *Male* and *Female*,) which moſt deſerve our Care, in that they are quick Growers, and riſe to a prodigious Stature: Beſides theſe, there are ſeveral other Kinds which are not worth our notice; ſo that we ought to be careful in the Choice of the *Keys* or *Seeds* we deſign to ſow. I have heard of *Aſh* Trees of 40 Years Growth from the *Seed*, that have been ſold for 25 *l.* a-piece; which have grown on Plains, in light *Earth* not very deep: And Mr. *Evelyn* tells us, that one Perſon planted ſo much of this ſort of *Timber* in his Life-time, as was valued worth 50,000*l.* to be bought; which he juſtly remarks, was very good Encouragement for a ſmall and pleaſant Induſtry. The *Keys* of this *Tree* are ſowed about *October*, or elſe may be laid at that time in *Sand*, *S. S. S.* till the following Spring, and then ſown. The *Timber* of the *Aſh* is uſed for Ploughs and Axel-trees, Wheel-rings, Oars, and many other mechanick Works: And if we propagate the *Aſh* for *Underwood* only, it will turn to good account for Hoops and Hop-poles. It may be cut about *February*.

The *B E E C H* delights in Mountains. In *Berkſhire*, in the *Chalky* Hills, this Tree is very proſperous, and attains a conſiderable Stature. Its *Timber* is uſed about Keels of Ships, and many Implements of Huſbandry. It is the moſt common *Fire-wood* of *England*, eſpecially about *London*, where Billets are uſually burnt. Among the Coal-pits near *Newcaſtle upon Tyne*, this Wood is much uſed to make Cart-ways; where for many Miles, the Wheels of the Coal-waggons run upon it; which ſaves the Expence of Horſe-fleſh. This Wood will remain ſound for many Years in thoſe marſhy Lands, and is much eſteemed for that Uſe. From the *Seed*, which is called *Beech-maſt*, the *French* have long ſince drawn a very ſweet Oil for eating, and lately the ſame has been practiſed in *England*. This *Seed* is likewiſe good to feed *Deer*, *Hogs*, and *Fowl:* It may be ſown about *October*, or put in *Sand* like the *Aſh-Keys* till Spring, the better to preſerve it from *Vermin*. The *Timber* may be cut as the former.

We have many ſorts of *ELM* frequent in *England*, among which the *Vulgar* or *Mountain Elm* is counted the beſt for *Timber:* I ſhall therefore recommend this *Sort* to the Planter before all others. It may be propagated from the *Seed* or *Samera*, which ripens and falls from it towards the latter End of *April*, or Beginning of *May*; it muſt then be ſown in fine ſifted *Earth*, or what I call *Loam* in the foregoing Chapter. This *Seminary* muſt be made in a ſhady Place, and watered from time to time, as the *Earth* begins to dry: But beſides this way of raiſing *Elms*, we may either propagate them from *Layers*, or *Suckers*; which laſt muſt be tranſplanted into *Beds* of fine *Earth* about the Beginning of *March*, and kept well watered. And ſo naturally is the *Elm* inclined to *Vegetation*, that I have heard ſome affirm, by ſowing only the *Chips* of it in a Piece of plow'd Ground, they have raiſed a large Quantity of theſe Trees; which perhaps is not impoſſible: For I am aſſured in other Caſes, the *Buds* and *Leaves*, nay, the very *fibrous Roots* of *Plants*, have been made to *vegetate* and produce Trees. As for Example: The ſingle *Leaves* of *Oranges* have been made to ſtrike *Root*, and produce *Branches*, *Leaves*, *Flowers*, and *Fruit*, by ſetting them half-way in the *Earth*; and Mr. *Fairchild* of *Hoxton* has done the like with *Leaves* of *Lauruſtinus:* However, let us raiſe our *Elms* which way we will, I ſhall adviſe that they be not *planted* out of their firſt *Beds* till they have ſtood there two Years; and then remove them to greater Diſtances from each other, and let them ſo remain till you plant them out for good, at about 20 Foot diſtance in *Beds* of the ſifted *Loam* directed: They grow quick, give a fine Shade, and afford valuable *Timber:* And if the *Witch Elm* or *Dutch Elm* be grafted upon this Kind, we may expect them to make *Shoots* of above eight Foot long in one Year, and produce *Leaves* of an extraordinary Bigneſs; but the Wood will then not be ſo valuable. This Tree delights in an *Earth* competently fertile, neither too dry or ſandy, or too cold and ſpungy; nor does it require a deep *Soil.* Let it be moderately refreſhed with Water after *planting*; and to keep the *Earth* about the *Roots* more open, and ready to receive Wet, cover the *Bed* it is *planted* in with rotten *Fern*, or other ſuch-like Matter. A Year or two after *planting*, you may refreſh the young *Fibres* at the Extremities of the *Roots* with ſome fine ſifted *Earth*, or any one of the four firſt *Mixtures* mention'd in the foregoing Chapter, which will make the Tree ſhoot prodigiouſly, for that they contain *vegetable Salts* in great abundance. The *Timber* of this *Tree* is very ſerviceable, eſpecially where it may always lie wet, it will laſt a long time; it is mightily uſed for Pipes, Pumps, Mills, and ſuch Parts of Ships as lie conſtantly under Water: In a word, it is almoſt of general Uſe. The Time of felling it is from *November* to *February*.

We have two Kinds of *CHESNUT* in *England*; that which bears *edible Fruit*, and the other which is called the *Horſe-cheſnut.* The firſt of theſe Trees affords good *Timber*, and the latter is only deſirable for its pleaſant Shade and beautiful Flowers. Theſe *Trees* may both be raiſed by ſetting the *Nuts* about three Inches deep in a light, ſandy *Soil*, towards the latter End of *February* or Beginning of *March*; but as the firſt only is uſeful, ſo I ſhall chuſe to recommend it to the *Foreſter*. It delights in high Grounds remote from Water, which would ſpoil both its *Timber* and *Fruit*, and ſhould indeed be ſet from the *Nut*, where it is always to remain; for it is apt to ſuffer greatly by removing, and ſpread too much in its Branches, when it loſes its *Tap-root*, as all other *Tap-rooted* Trees are known to do. Its *Timber* is laſting if it be kept dry, and good for Building; and if it be planted for *Underwood*, it will afford excellent Poles and Stakes in nine Years after ſowing, worth at leaſt 10 *s. per* Hundred. The *Fruit* is ſometimes uſed at our Tables, but more commonly given to *Deer* and other Cattle to fatten them. We may fell the *Tree* any time between *November* and *February*.

Among the *Botaniſts*, there are reckon'd many Sorts of *WALNUTS*, two only of which I ſhall recommend to the *Planter*, viz. that with the *ſoft Shell*, for the ſake of the *Fruit*; and that with the *black Grain*, for the Goodneſs of its *Timber*. They are both raiſed from the *Nuts*, like the *Cheſnut*; and ſhould, like them, be ſown in the Places where they are to remain. They are in great danger of Death if they loſe the *Tap-root*, but will thrive extremely if they have Depth of Earth to ſtrike into. The *Walnut* grows well in *Loam*, but will flouriſh alſo in *Chalk*, or gravelly *Soil*, either on hilly Ground, or in a Vale, which (I think) ſhews it to be a foreign *Plant*: For, as I have obſerved, every *Plant* natural to *England* has a *Soil* and *Expoſure* peculiar to itſelf, and will ſcarce be made to grow in any other ſort of *Land* or *Situation*. I have ſeen ſome *Walnut* Trees of forty Years *Growth* from the ſetting of the *Nuts* that were valued at 5 *l.* a-piece; and others ſtanding by them, which were Trees planted at the ſame time (as the Owner himſelf informed me) that were not worth 30 *s.* a Tree: And the like Obſervation has been made of other *Tap-rooted* Trees, but particularly the *Oak*: So great is the Difference of *Growth* in downright-rooted *Plants* when they are ſet from *Acorns* or *Nuts*, and *tranſplanted* from the *Nurſery*. The *Timber* is much uſed for Chairs, Cabinets, and Houſhold Furniture; it is durable, and an Enemy to Worms from its exceeding Bitterneſs. The *Nuts* yield abundance of Oil, and take place among the beſt *Fruits* for the Table. This *Tree* may be cut down when the *Sap* is fixed, *i. e.* from *November* to *February*.

The *ILEX*, or *EVER-GREEN OAK*, is a *Plant* which produces admirable *Timber*; but is more particularly valuable for its *Knee Timber*, which is much tougher than that of our *Engliſh Oak*: It is in ſuch requeſt among our Ship-Carpenters, that many Ships Lading of it has been brought to *England*. The *Tree* is of quick *Growth*, and will attain to a very conſiderable Height, even to equal the talleſt of the *Engliſh Oaks*; to which Perfections we may alſo add the Beauty of its *Leaves*, which are green all Winter.

That curious Gentleman *Robert Balle*, Eſq; *F. R. S.* has, among other Improvements for the Good of his Country, propagated a large Parcel of theſe *Trees* in *England*; ſome of which have in about 30 Years ſpace grown to a conſiderable Greatneſs of Stature: And it is to be wiſh'd that others would follow his Example in the Culture of this beautiful and profitable *Tree*. This Gentleman has raiſed ſome Thouſands of them from *Acorns*, and tranſplanted them with Succeſs and great Judgment; and to follow his Method, we muſt ſet the *Acorns* in *Loam* well ſifted, in Garden-pots, in *February*, and turn them out with the Earth about their *Roots* when they are two Years *Growth*, to tranſplant them afterwards at proper Diſtances, where they are to remain. Theſe, like our *Engliſh Oaks*, are *Tap-rooted*, and therefore delight in deep *Soil*: They proſper in moiſt Land, rather on a Plain, than on hilly Ground. If we conſult the *Anatomy* of *Plants*, we ought to be very careful not to injure their *Tap-roots*, which are always anſwerable to the *Leading-ſhoot* on the *Top* of the *Tree*. It is therefore reaſonable to believe, that a *Plant*, by loſing that *Downright-root*, is in danger of loſing alſo the *Top-ſhoot* which is fed from it: And altho' a *Tree* may ſtrike freſh *Roots* after the *Amputation* of this *Leading-root*, yet we may find by Experience, that the *Sap* will then puſh forth *Branches* in the Sides of the *Stem*, and diſcontinue its upright *Growth*. We may fell this Tree, as we do the other *Oak*, for the ſake of its Bark. The *Acorns* are good Food for *Deer* and *Fowl*, which greatly delight in the Shelter of theſe *Trees*.

## SECT. II.

## *Of UNDERWOODS.*

HAving mention'd the moſt valuable *Trees* for *Timber*, I am in the next place to take notice of ſuch others as will afford us the moſt valuable Crops of *UNDERWOOD*.

I have already obſerved, that the *ASH* and *CHESNUT* may be order'd in this manner, and bring conſiderable Returns to the Proprietor. The next which I ſhall propoſe for this Uſe is the *HAZEL*; which, if it be rightly managed, will turn to good account in *Coppices*. This *Plant* may be raiſed from the *Nuts* ſown a little after they are ripe, in cold, dry, ſandy Ground; but if the *Land* happens to be more inclined to *Clay*, plow it in *Autumn*, and let it mellow with the *Froſts* till *February* before you ſow them. The Learned adviſe, that after the *Seedling-plants* are come up, they ſhould be weeded or hough'd, ſo as to leave the *Plants* at three Foot diſtance from each other; and after three Years *Growth*, to cut them off within half a Foot of the Ground: By which means they will be made to ſhoot forth many *Twigs* from each *Stem*, which in nine Years time (*i. e.* twelve from putting in the *Seed*) will be fit to cut for Hop-poles, Hoops, Faggots, and other ſuch Uſes; but if you rather chuſe to uſe them for Hurdles, then they may be cut at five Years *Growth*. After the firſt Cutting, you may cut again in ſeven or eight Years, if they like the Ground, for Poles and Hoops, as before; and ſo continue to do from time to time as you ſee occaſion. But theſe *Trees* may be likewiſe propagated by *Suckers*, which are frequently found growing about the *Roots* of old Trees, but are not very certain in their *Growth* after tranſplanting, unleſs they are carefully water'd, till they have ſtruck good Roots. In a Plantation of this kind, which may be made at any time between *October* and the Beginning of *March*, when the Weather is open, theſe *Suckers* muſt be ſet at three Foot diſtance, and cut down within half a Foot of the Ground about the Beginning of *April* following, or they may alſo be propagated by laying down their *Branches* or *Twigs* about three Inches in the Earth; which will furniſh us with abundance of young *Plants* in a Year's time. This Work muſt be done about *October*.

The next I ſhall treat of is the *WILLOW*, an *Amphibious Plant*. There are many Sorts of it diſtinguiſh'd by the *Botaniſts*, which ſhould I mention here by their ſeveral Names, I might perhaps perplex my Reader, and ſhall therefore only mention them as two Kinds; firſt, the *OZIERS*, which afford Twigs for the Baſket-makers, and Binding-Rods; and, ſecondly, the Tree-kind or *WITHY*.

Firſt then, the *OZIERS*, which afford us Twigs for Wicker-works, are raiſed by ſetting Slips of two or three Years *Growth* about a Foot deep in marſhy or wet *Ground*, at two Foot diſtance from each other. This *Work* is beſt done about the Middle of *February*, if the Weather be open. The ſecond Year after *planting*, they may have their Tops cut off, leaving their Stems about a Foot above Ground; ſo will they put forth Twigs, which muſt be again cut down early the Spring following: Which Work being continued every Year, the Owner will find conſiderable Advantage from ſuch *Plantations*. An Acre of Ground thus managed will turn to better account than the like Parcel of *Land* ſown with *Wheat*, or any Grain whatever: And it may be for this reaſon, that ſome would pretend to raiſe vaſt Sums of Money by planting ſeveral thouſand Acres in this way, as I have been informed ſeveral Gentlemen propoſe to do. It is certain, at preſent, *Oziers* turn to good account; but I am of opinion, that if we had only as many more planted as we have now growing in *England*, the Markets would be over-ſtock'd with them, and their Price would fall: And beſides, every *Ground*, as I have ſaid before, will not produce them. In this Treatiſe may be found the ſeveral Sorts of *Trees* for Uſe, the different *Lands* they require for their Welfare, and the vaſt Returns they would bring in, if large *Plantations* were made of the ſeveral Kinds by a diſcreet *Planter*, who knew how to allot to every *Soil* the *Tree* proper for it. But I ſhall proceed now to give ſome Directions for the propagating of the large *Withy* or *Tree-kind*; which will alſo in a few Years time afford profitable, tho' not very durable *Wood*. Its Uſe is for Perches, Rake-tales, and ſuch-like. *Branches* of three or four Years *Growth*, about two Foot in length, being ſet near two Foot deep in the Ground in *February*, about fifteen Foot aſunder, will ſoon make handſome *Trees* which will bear *Lopping* every fifth Year: Theſe love wet Ground, and will not be made to proſper in any other. I might add, that this, and ſeveral other ſorts of *Willow*, might be raiſed from Seeds which are born on the *Female Juli*, if we ſow them in wet, boggy Ground, as is practiſed in *France* and other Countries.

The *ALDER*, more than all other Trees beſide, delights in boggy Places, and may be cultivated in the coldeſt wet Grounds. This *Amphibious Plant* is beſt raiſed from Truncheons or Branches about three Foot in length: Setting them about *February* a Foot deep in the Ground, they thrive exceedingly on the Banks of Rivers, and will make ſuch Shoots in three or four Years time, as may be then cut and ſold to good advantage for Poles and other Uſes. It is a laſting Wood if it lie continually under Water; and, if we believe *Joſ. Baubinus*, will in courſe of time turn to Stone; but if it be expoſed, ſo as to be ſometimes wet, and ſometimes dry, it is of no duration. This *Plant* is alſo raiſed from Seed, in *Flanders*; where they make great profit of it.

SECT.

## SECT. III.

## *Of Felling of TIMBER, and Dreſſing, Cleaning, and Pruning of WOODS.*

THUS have I given a ſhort View of the ſeveral ſorts of *Trees* which I would recommend to be planted for * *Timber* and *Underwood:* I have endeavour'd to aſcertain the ſeveral *Soils* and *Situations* proper to each of them; which I hope may be of ſome uſe: For that in the Quantity of an Acre of Ground, we find Earths of very different Qualities, to any of which one or other of the *Trees* I have named may be allotted. And now, as I ſuppoſe that every Gentleman who is about to make a *Plantation*, will certainly make it upon his own *Land*, or at leaſt on ſuch a Parcel of Ground as will by Right be continued after his Demiſe in his Family, it is reaſonable enough to believe, that ſuch Perſons may have upon their Eſtates ſome *Timber* already growing, ſome *Trees* proſpering, others decaying: Now, I ſay, It would ſurely be good Huſbandry to fell ſuch *Trees* as begin to decline, either from too great Age, or too near Neighbourhood with others.

To the firſt, I can pretend to give no other Direction, than to have them cut down at the proper *Seaſon*; but to the ſecond, *(i. e.)* where they grow too cloſe together, leave the moſt thriving *Trees* to grow and improve themſelves, and cut up the others *root* and *branch*, leaving convenient Diſtances between the *Trees* which remain ſtanding, which ought to be only ſuch as have their *Tops* or *Leading-ſhoots* proſperous, and in good order.

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* *For a further Account of* Trees *and* Underwood, *not mentioned in this Chapter, ſee the latter End of* Chap. V.

Our Countryman *Lawſon*, who had for above forty Years ſtudy'd the Improvement and Management of *Woods* and *Timber-trees*, has given us a very good Leſſon concerning the *Dreſſing* and *Cleaning* of *Woods*; which being ſhort and much to the purpoſe, I ſhall inſert in his own Words:

“ How many *Foreſts* and *Woods*, wherein you
“ ſhall have, for one *thriving Tree*, four (nay ſome-
“ times twenty-four) *evil-thriving*, rotten, and
“ dying *Trees*, even while they live; and inſtead
“ of *Trees*, thouſands of *Buſhes* and *Shrubs!* What
“ *Rottenneſs*, what *Hollowneſs*, what *dead Arms*,
“ *wither'd Tops*, *curtail'd Trunks*, what Loads of
“ *Moſs*, *drooping Boughs*, and *dying Branches*, ſhall
“ you ſee every where; and thoſe that are in this
“ ſort, are in a manner all unprofitable *Boughs*,
“ *canker'd Arms*, crooked, little, and ſhort *Bolls!*
“ What an infinite number of *Buſhes*, *Shrubs*,
“ and Scrags of *Hazles*, *Thorns*, and other unpro-
“ fitable *Wood*; which might be brought, by
“ dreſſing, to become great and goodly *Trees!*
“ Conſider now the Cauſe:

“ The *Leſſer Wood* has been ſpoiled with care-
“ leſs, unſkilful and untimely *Stowing*; and much
“ alſo of the *Great Wood*. The *greater Trees*, at
“ their firſt riſing, have fill'd and overladen them-
“ ſelves with a number of *waſteful Boughs* and
“ *Suckers*, which have not only drawn the *Sap* from
“ the *Boll*, but alſo have made it knotty, and
“ themſelves and the *Boll* moſſy, for want of
“ *Dreſſing:* Whereas, if in the Prime of *Growth*
“ they had been taken away cloſe all but one *Top*,
“ and clean by the *Bulk*, the Strength of all the
“ *Sap* would have gone to the *Bulk*, and ſo he
“ would have recover'd, and cover'd his *Knots*,
“ and have put forth a fair, long, and ſtrait *Bo-*

"*dy* for *Timber*, profitable, huge, great of *bulk*, "and of infinite laſt.

"If all *Timber-trees* were ſuch, (will ſome ſay) "how ſhould we have crooked Wood for *Wheels*, "*Curbs*, &c.

"*Anſwer*. Dreſs all you can, and there will be "enough crooked for thoſe Uſes.

"More than this, in moſt Places they grow ſo "thick, that neither themſelves, nor *Earth*, nor "any thing under or near them, can thrive; nor "*Sun*, nor *Rain*, nor *Air*, can come at them.

"I ſee a number of *Hags*, where, out of one "*Root*, you ſhall ſee three or four (nay, more, "ſuch is Men's unſkilful Greedineſs, who deſiring "many, have none good) pretty *Oaks*, or "*Aſhes*, ſtrait and tall; becauſe the *Root* at the "firſt *Shoot* gives *Sap* a-main: But if *one* only of "them might be ſuffer'd to grow, and that well "and cleanly pruned all to his very *Top*, what a "Tree ſhould we have in time? And we ſee by "thoſe *Roots* continually and plentifully ſpringing, "notwithſtanding ſo deadly wounded, what "a Commodity would ariſe to the *Owner* and "the *Commonwealth*, if *Wood* were cheriſh'd and "orderly dreſs'd. The waſte Boughs cloſely "and ſkilfully taken away, would give us Store "of *Fences* and *Fuel*, and the Bulk of the Tree "in time would grow of huge Length and "Bigneſs."

And now, from what has been ſaid relating to the Cleanſing, Dreſſing, and Pruning of *Woods*, two Things naturally offer to the Benefit of the Proprietors: *Firſt*, That the Profit which will accrue from the Fall of diſtemper'd and decaying *Timber* and *Underwood*, will afford a Sum of Money ſufficient to make large *Plantations*. And, *Secondly*, The Trees which remain ſtanding after this Weeding is performed, will grow and proſper exceedingly, by being then at liberty to receive a greater Quantity of *Nouriſhment* from the *Earth*, and by enjoying ſuch a Proportion of *Air*, as their Age and Strength will require.

## CHAP. V.

## *The Method of Planting an* Acre of Ground *with* Timber-Trees *and* Underwood; *with the* Profits *which will ariſe from that* Plantation *in nine Years, ſeventeen Years, and twenty-five Years after* Planting. *To which are added, Directions for the Management of* Sycamores, Maples, Limes, Poplars, *and ſeveral other* Timber-Trees, *omitted in the preceding Chapter.*

IF we conſider the many Advantages this Nation in general has received from the *Timber* of its own *Growth*, how by its powerful Fleets (the Offſpring of its *Oaks*) *England* has gain'd the Dominion of the Seas, and now enjoys the Benefits of an univerſal Commerce, without mentioning the Advantages it affords to every particular Owner of it; it is wonderful to me, that the propagating of *Timber*, a Commodity ſo valuable and ornamental, ſhould be ſo little encouraged now-a-days among us, when our natural Store is ſo near being conſumed, that in all appearance, in a few Years time, we may be forced to ſeek it in foreign Countries.

Now, if I may be allowed to judge in this Caſe, I conceive that the preſent Decay of our *Timber* may depend upon one or other of the following Reaſons:

*Firſt*, That the making of *new Plantations* will be an immediate Expence to us. Or,

*Secondly*, That we cannot hope to reap any *Profit* to ourſelves from ſuch *Plantations* as might be made in our Times. Or elſe,

*Thirdly*, That many Gentlemen, who are already Maſters of *Woods*, receive little *Profit* from them, for want of due Care and Management.

The firſt and laſt of theſe Objections are anſwer'd, I think, in the foregoing Chapter; where the Advantages of cleanſing and dreſſing of *Woods* are ſet down: In that not only Money is provided thereby to anſwer the Expence of *new Plantations*, but alſo the ſtanding *Trees* will be put into a thriving Condition.

It remains now for me to anſwer the other Objection, *viz.* That we cannot propoſe to reap any *Profit* to ourſelves from the *Plantations*, which might be made by us. But I hope the Method which I ſhall herein propoſe will give full Satisfaction to that Point.

For which end, I would recommend that every *Plantation* which ſhall be made either in this preſent Age, or hereafter, may conſiſt partly of *Foreſt* or *Timber Trees*, and partly of *Coppice* or *Underwood*.

Now, the *Underwood* which I propoſe to be planted and intermixed among the *Timber Trees* or *Standards*, may be cut in eight or nine Years after planting; and ſo from time to time every eighth Year will produce a very conſiderable Return, as will appear hereafter in a ſtated Account.

*Secondly*, The *Plants* for *Underwood*, which will encompaſs on every ſide the young *Timber-trees*, will not only ſhelter them from Blaſts of Wind, which might be hurtful to them, but will alſo (by keeping off the circumambient Air) draw them into ſtrait and tall *Trees*, till they can ſhift for themſelves, and are ſtrong enough to bear the Severity of the Weather.

But, to proceed: Let us make choice of ſuch Ground to plant upon, as may not be thought proper for Corn, or at leaſt ſuch as will yield only a poor Crop of Grain: I ſuppoſe ſuch Land will be worth about five Shillings *per* Acre by the Year; and by all means let it be, if poſſible, near ſome navigable River, for the greater Eaſe and Cheapneſs of Carriage. Now, as I have before hinted, that as the Land is, ſo muſt we allot the proper *Plant* for it; I only wiſh it may be deep enough to nouriſh the *Oak* and *Ilex*, which are *Tap-rooted Plants*, and therefore delight in deep Soil.

Suppoſing then we are fortunate enough to meet with an Acre of Ground proper for *Oaks*; we muſt firſt encompaſs it with a good Fence, and then either dig or plough the Land at a proper Seaſon, to lie fallow for ſome time, till the Turf be mellow'd, and fit for our Purpoſe.

An *Acre* of Ground contains one hundred and ſixty ſquare *Perches* or *Rods*, each Rod being ſixteen Foot and a half. This Quantity of Land muſt be fenced about with a Ditch ſix Foot wide, three Rows of *Quickſets* planted upon the Sides of its Banks at a Foot diſtance from each other, and a dry Hedge on the Top.

A Labouring-man working for one Shilling *per Diem*, may prepare nine Foot of the Ditch in length in one Day, and cut Stakes and Buſhes, and make about five Rod of the dry Hedge in a Day; ſo that he may prepare the Hedge, make the Ditch, plant three Rows of *Quickſets*, and pay the Expence of them after the rate of two Shillings *per Hundred*, for about three Shillings the *Perch*: So will the whole Charge of making a Fence about an *Acre* of Land be ſeven Pounds ſixteen Shillings. But we may fence in two *Acres* of Land after the ſame rate, being thirty-two Perch long, and ten Perch wide, for nine Pounds ſix Shillings; for the ſame reaſon, that if one hundred *Hurdles* will hold a thouſand Sheep, two *Hurdles* added to them will hold two thouſand Sheep; that is, if the Sheep-pen has forty-nine *Hurdles* on each Side, and one at each End, it juſt contains half the Quantity of Ground that it would do if it had the Breadth of two *Hurdles* at the Ends. *N. B.* A *Pole* or *Perch* planted with three Rows of *Quickſets*, will take up about forty-eight *Plants*; ſo will there be required to plant about an *Acre* 2496 *Plants.*

Thus having provided a good Fence to defend our young *Plantation* from Dangers of Cattle, and other Inconveniencies, the next thing to be done is to prepare the encloſed Land for *Planting*; which may be perform'd ſeveral ways.

Suppoſing the Land to be encumber'd in the worſt manner, with Buſhes, Whins, or Furze, &c. ſo that a Plough cannot be uſed upon it, then may it be dug and clean'd for about Sixpence the ſquare *Perch*: The whole *Acre*, if it be dug at that rate, will come to four Pounds. But if the Ground ſhould happen to be in that ſtate that a Plough can work in it, an *Acre* may be plough'd for about twelve Shillings.

The Land being thus prepared, one *Acre* will contain forty Plants of *Oak* at thirty-three Foot diſtance: And, as I have hinted before, that all *Tap-rooted* Trees are endangered by removing, and that when they are *tranſplanted*, they ſeldom come to the Perfection of thoſe which are raiſed from *Seed*, and remain always in the ſame Place; I ſhall therefore recommend, that forty Beds of good natural *Soil* be prepared on the *Acre* of Land, at the aforeſaid Diſtance of thirty three Foot from each other, and that in each *Bed* five or ſix *Acorns* be planted at about four Inches deep in *February*; which Seaſon I chuſe rather than *Autumn*, becauſe the over Wet of ſome Winters might rot the Seeds; or *Mice*, *Squirrels*, and ſuch-like Animals, might deſtroy them.

Theſe forty *Beds* may well be prepared by one Man in three Days, at one Shilling *per Diem:* Two hundred *Acorns* may be worth about Sixpence, and the Planting of them be worth Sixpence more; which makes in all four Shillings.

The *Acre* of Land being thus ſown with *Oaks*, we may interſow the remaining Part of the Ground with *Aſh-keys*, which have been kept the Winter in dry Sand: Theſe will turn to very good account for *Underwood*; and the Land is already dug or plough'd for our Purpoſe.

One Buſhel of *Aſh-keys* may be worth two Shillings, the Sowing them one Shilling, and the Harrowing the Ground after Sowing will be worth five Shillings more; in all eight Shillings. The *Acorns* will come up the firſt Year; but the *Aſh* will not ſpring till the ſecond Year, unleſs they are old Seed: They muſt then be hough'd and cleans'd from the Weeds. One Man may do this Work in three Days, leaving the Diſtance of three Foot between the *Aſhen Plants.* The Expence of this Weeding will be three Shillings; for I rate a Man's Work at one Shilling *per Diem*, becauſe I ſuppoſe ſuch *Plantations* will only be made in thoſe Places where Land is cheap, and conſequently every thing elſe is valuable in proportion.

The ſecond Year we may draw ſome of the young *Oaks*, leaving a ſingle *Plant* in each *Bed*. Now, it is likely that all the *Acorns* which were put into the Ground may not come up; therefore I would adviſe, as the ſureſt way to have our Expectations anſwer'd from the *Seeds* we ſow, to try the Goodneſs of them before they are ſown; which may be done by putting them in Water, and planting only thoſe which ſink quickly to the Bottom.

An *Acre* of Land thus *fenced*, *dug*, *cleanſed*, and *planted*, comes to twelve Pounds and eleven Shillings; and two *Acres* dreſs'd and planted in like manner, will coſt eighteen Pounds ſixteen Shillings.

But if the Land be clean enough to admit the Plough, then the Charge of *fencing*, *planting*, &c. of one *Acre*, will be nine Pounds three Shillings; and the Expence of two *Acres* dreſs'd in the ſame manner, twelve Pounds.

In nine Years after this *Plantation* has been made, the *Aſh-plants* will be fit to cut for *Poles*, or *Hoops*, worth upon the place ten Shillings *per Hundred*. If the *Plants* ſtand at a Yard diſtance from each other, the *Acre* of Land will then contain about 4800 *Plants*, which may be ſold for twenty-four Pounds. The *Quickſet* Fence muſt likewiſe be cut down, and will yield about ten Load of Buſhes; we will ſuppoſe them only worth

## Account of the Seventeen Years after Planting, or Second Cutting.

| | l. s. d. | | l. s. d. |
|---|---|---|---|
| Rent of the Land for eight Years, at Five Shillings *per Annum* | 02 00 0 | Received for 19200 *Aſhen Poles*, at 10 *s.* *per Hundred* | 96 00 0 |
| Expence for Cutting 19200 *Aſhen Poles* (reckoning four to each Plant) one Man 20 Days at One Shilling *per Diem* | 01 00 0 | Received more for Ten Load of Buſhes, at Five Shill. *per Load* | 02 10 0 |
| | | Gained, clear of Expences, by the firſt Cutting | 05 16 6 |
| 17 Years Expence | 03 00 0 | The Intereſt which might be gained on 5 *l.* 16 *s.* 6 *d.* in 8 Years, at 5 *per* | 02 06 0 |

## *Account of the Twenty five Years after Planting, or Third Cutting.*

| | *l. s. d.* | | *l. s. d.* |
|---|---|---|---|
| Rent for eight Years, at Five Shillings the *Acre per Annum* —— | 02 00 0 | Received for 19200 *Aſhen Poles*, at Ten Shillings *per Hundred* —— | 96 00 0 |
| Expence of Cutting 19200 *Aſhen Poles*, one Man 20 Days at One Shilling *per Diem* —— | 01 00 0 | Received more for Ten Load of Buſhes, at Five Shillings *per Load* | 02 10 0 |
| | | Gain'd clear of Expences by the Second Cutting— | 103 12 6 |
| 25 Years Expence | 03 00 0 | The Intereſt which might be gain'd on the aforeſaid Sum in 8 Years, at 5 *per Cent.* —— | 41 08 0 |
| | | 25 Years Gain — | 243 10 0 |
| | | 25 Years Expence | 03 00 0 |
| | | Neat Profit of the Plantation in 25 Years —— | 240 10 6 |
| | | To which we may add the Value of the Forty *Oaks* then growing in the ſaid Plantation worth Ten Shillings *per Tree* —— | 20 00 0 |
| | | In all | 260 10 6 |

five Shillings *per Load*, although near *London* they ſell for four times as much.

The whole Charge of *fencing*, *digging*, and *planting* an *Acre* of Land with *Oaks* for *Timber*, and *Aſh* for *Underwood*, with the Profit of the firſt nine Years *Growth*, may be ſeen in the following Account.

NEW

# IMPROVEMENTS

OF

# *Planting* and *Gardening*,

BOTH

Philoſophical *and* Practical:

CONTAINING

The beſt Manner of Improving Flower-Gardens, or Parterres; of Raiſing and Propagating all Sorts of Flowers; and of the Adorning of Gardens.

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Illuſtrated with Copper-Plates.

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——— *Hortos quæ* Cura Colendi
*Ornaret* ——— Virg. Georg.

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## PART II.

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By *RICHARD BRADLEY*, F. R. S.

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The Seventh Edition.

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*LONDON:* Printed for A. Betteſworth and C. Hitch, J. and J. Pemberton, J. and P. Knapton, and D. Brown, MDCCXXXVIII.

## *Account of the Seventeen Years after Planting, or Second Cutting.*

| | l. | s. | d. | | l. | s. | d. |
|---|---|---|---|---|---|---|---|
| Rent of the Land for eight Years, at Five Shillings *per Annum* — | 02 | 00 | 0 | Received for 19200 *Aſhen Poles*, at 10 s. *per Hundred* — | 96 | 00 | 0 |
| Expence for Cutting 19200 *Aſhen Poles*, (reckoning four to each Plant) one Man 20 Days at One Shilling *per Diem* | 01 | 00 | 0 | Received more for Ten Load of Buſhes, at Five Shill. *per Load* — | 02 | 10 | 0 |
| 17 Years Expence — | 03 | 00 | 0 | Gained, clear of Expences, by the firſt Cutting — | 05 | 16 | 6 |
| | | | | The Intereſt which might be gained on 5 *l.* 16 *s.* 6 *d.* in 8 Years, at 5 *per Cent.* is about — | 02 | 06 | 0 |
| | | | | 17 Years Gain — | 106 | 12 | 6 |
| | | | | 17 Years Expence | 03 | 00 | 0 |
| | | | | Neat Profit of the Plantation in 17 Years after planting — | 103 | 12 | 6 |

## *Account of the Twenty five Years after Planting, or Third Cutting.*

| | l. | s. | d. |
|---|---|---|---|
| Rent for eight Years, at Five Shillings the *Acre per Annum* —— | 02 | 00 | 0 |
| Expence of Cutting 19200 *Aſhen Poles*, one Man 20 Days at One Shilling *per Diem* —— | 01 | 00 | 0 |
| 25 Years Expence | 03 | 00 | 0 |

| | l. | s. | d. |
|---|---|---|---|
| Received for 19200 *Aſhen Poles*, at Ten Shillings *per Hundred* —— | 96 | 00 | 0 |
| Received more for Ten Load of Buſhes, at Five Shillings *per Load* | 02 | 10 | 0 |
| Gain'd clear of Expences by the Second Cutting— | 103 | 12 | 6 |
| The Intereſt which might be gain'd on the aforeſaid Sum in 8 Years, at 5 *per Cent.* —— | 41 | 08 | 0 |
| 25 Years Gain — | 243 | 10 | 0 |
| 25 Years Expence | 03 | 00 | 0 |
| Neat Profit of the Plantation in 25 Years —— | 240 | 10 | 6 |
| To which we may add the Value of the Forty *Oaks* then growing in the ſaid Plantation worth Ten Shillings *per Tree* —— | 20 | 00 | 0 |
| In all | 260 | 10 | 6 |

due Cultivation of theſe innocent Pleaſures, will both improve our Underſtanding, and better our Morals.

The Temptations to Vice are always taken off in Proportion to the Employments of thoſe Minutes which are by many ſpent in Idleneſs; and the vicious and litigious Part of Mankind, whom your Lordſhip's juſt Awards correct, would be much leſſen'd, if Recreations of this Nature took up more of the Time of thoſe who have an Opportunity of ſpending it in Gardens.

I avoid, *My Lord*, ſpeaking in the common Way of Dedicators, being certain that nothing can more offend YOU, than a Recital of Your own Praiſes. If any Thing in theſe Papers can be but the Entertainment of one half Hour of Your Lordſhip's in Your Retirement from the Sphere of Publick Buſineſs, it is the utmoſt Ambition of,

*May it pleaſe Your Lordſhip,*

*Your Lordſhip's*

*Moſt Devoted, Humble Servant,*

R. BRADLEY.

Fig I

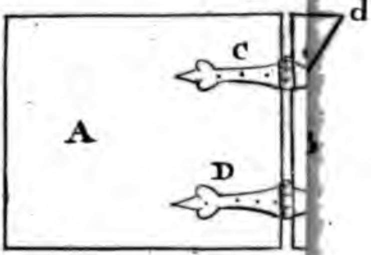
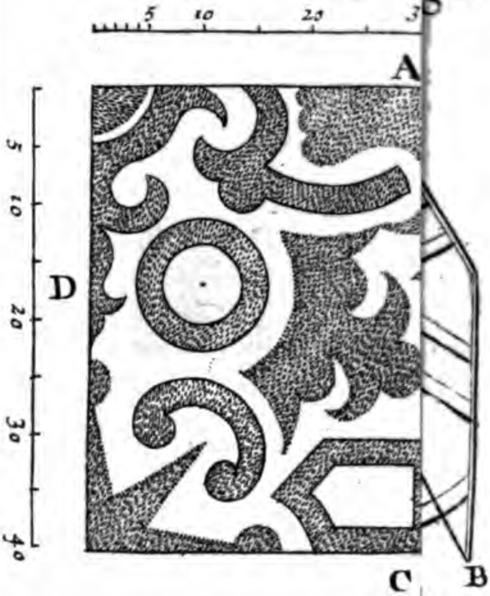


Fig IIII

g III



p.t 2.d

# NEW
# IMPROVEMENTS
# OF
# *Planting* and *Gardening*,
# BOTH
# Philoſophical *and* Practical.

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## CHAP. I.

## *Deſcription and Uſe of a* New Invention *for the more ſpeedy Deſigning of* Garden-Plats; *whereby we may produce more Variety of Figures in an Hour's time, than are to be found in all the Books of* Gardening *now extant.*

SINCE the Inſtrument I now deſign to treat of has afforded ſome Pleaſure to many of my Acquaintance, I have been eaſily perſuaded to make it publick. It is of that *nature*, that the beſt Deſigners or Draughts-men may improve and help their Fancies by it, and may with more certainty hit the Humour of thoſe Gentlemen they are to work for, without being at the trouble of making many Varieties of *Figures* or *Garden-plats*; which will loſe time, and call an unneceſſary Expence, which frequently diſcourages Gentlemen from making up their Gardens. In ſhort, the Charge of the *Inſtrument* is ſo ſmall, and its Uſe ſo delightful and profitable, that I doubt not its favourable Reception in the World.

But, to proceed: We muſt chuſe two Pieces of *Looking-glaſs* of equal bigneſs, of the figure of a long Square, five Inches in length, and four in breadth; they muſt be cover'd on the Back with Paper, or Silk, to prevent rubbing off the Silver; which would elſe be too apt to crack off by frequent uſe. This Covering for the Back of the *Glaſſes* muſt be ſo put on, that nothing of it may appear about the Edges of the bright Side.

The *Glaſſes* being thus prepared, they muſt be laid face to face, and hinged together, ſo that they may be made to open and ſhut at pleaſure, like the Leaves of a Book. As for *Example:* The firſt *Figure* ſhews us the Backs of the two *Glaſſes* *A* and *B* joined together by Hinges, *C C* and *D D*; ſo that they may be open'd or ſhut to any Part of a Circle. And now the *Glaſſes* being thus fitted for our Purpoſe, I ſhall proceed to explain the Uſe of them.

Draw a large Circle upon Paper, divide it into three, four, five, ſix, ſeven, or eight equal Parts; which being done, we may draw in every one of the Diviſions a Figure at our pleaſure, either for *Garden-plats* or *Fortifications*. As for *Example:* In the ſecond *Figure* we ſee a Circle divided into ſix Parts, and upon the Diviſion marked *A* is drawn Part of a Deſign for a *Garden*. Now to ſee that Deſign entire, which is yet confuſed, we muſt place our *Glaſſes* upon the Paper, and open them to the ſixth Part of the Circle, (*i. e.*) one of them muſt ſtand upon the Line *b* to the Centre, and the other muſt be open'd exactly to the Point *c*; ſo ſhall we diſcover an entire *Garden-plat* in a circular Form (if we look into the *Glaſſes*) divided into ſix Parts, with as many Walks leading to the Centre, where we ſhall find a Baſon of an *hexagonal figure*.

We may more plainly ſee how the *Glaſſes* ought to be placed upon the Deſign, by viewing the third *Figure*. The Line *A*, where the *Glaſſes* join, ſtands immediately over the Centre of the Circle; the Glaſs *B* ſtands upon the Line drawn from the Centre to the Point *C*; and the Glaſs *D* ſtands upon the Line leading from the Centre to the Point *E*: The *Glaſſes* being thus placed, cannot fail to produce the compleat *Figure* we look for. And ſo whatever equal Part of a Circle you mark out, let the Line *A* ſtand always upon the Centre; and open your *Glaſſes* to the Diviſion you have made with your Compaſſes. If, inſtead of a Circle, you would have the Figure of a *Hexagon*, draw a ſtrait Line with a Pen from the Point *c* to the Point *d* in the ſecond *Figure*, and by placing the *Glaſſes* as before, you will have the *Figure* deſired.

So likewiſe a *Pentagon* may be perfectly repreſented, by finding the fifth Part of a Circle, and placing the *Glaſſes* upon the *Outlines* of it; and the fourth Part of a Circle will likewiſe produce a Square by means of the *Glaſſes*, or by the ſame Rule will give us any *Figure* of equal Sides. I eaſily ſuppoſe that a curious Perſon, by a little Practice with theſe *Glaſſes*, may make many Improvements with them, which perhaps I may not have yet diſcovered, or have for Brevity ſake omitted to deſcribe.

It next follows, that I explain how by theſe *Glaſſes* we may, from the Figure of a *Circle* drawn upon Paper, make an *Oval*; and alſo by the ſame Rule repreſent a long *Square* from a perfect *Square*. To do this, open the *Glaſſes* and fix them to an exact *Square*, place them over a Circle and move them to and fro till you ſee the Repreſentation of the oval Figure you like beſt; and ſo having the *Glaſſes* fix'd, in like manner move them over a ſquare Piece of Work till you find the Figure you deſire of a long *Square*. In theſe Trials you will meet with many Varieties of Deſigns. As for inſtance, the fourth *Figure*, altho' it ſeems to contain but a confuſed Repreſentation, may be varied into above 200 different Repreſentations by moving the *Glaſſes* over it, which are open'd and fix'd to an exact *Square*. In a word, from the moſt trifling Deſigns, we may by this means produce ſome thouſands of good Draughts.

But that the fourth *Figure* may yet be more intelligible and uſeful, I have drawn on every Side of it a Scale divided into equal Parts; by which means we may aſcertain the juſt Proportion of any Deſign we ſhall meet with in it.

I have alſo mark'd every Side of the fourth *Figure* with a Letter, as *A*, *B*, *C*, *D*, the better to inform my Reader of the Uſe of the Invention, and put him in the way to find out every Deſign contain'd in that *Figure*.

*Example* I. Turn the Side *A* to any certain Point, either to the *North*, or to the Window of your Room; and when you have opened your *Glaſſes* to an exact *Square*, ſet one of them on the Line of the Side *D*, and the other on the Line of the Side *C*; you will then have a ſquare *Figure* four times as big as the engraved Deſign in the Plate: But if that Repreſentation ſhould not be agreeable, move the *Glaſſes* (ſtill open'd to a *Square*) to the Number 5, of the Side *D*, ſo will one of them be parallel to *D*, and the other ſtand upon the Line of the Side *C*: Your firſt Deſign will then be varied;

and ſo by moving your *Glaſſes* in like manner from Point to Point, the Draughts will differ every Variation of the *Glaſſes*, till you have diſcover'd at leaſt fifty Plans differing from one another.

*Example* II. Turn the Side mark'd *B* of the fourth *Figure* to the ſame Point where *A* was before, and by moving your *Glaſſes* as you did in the former Example, you will diſcover as great a Varity of Deſigns as had been obſerv'd in the foregoing Experiment; then turn the Side *C* to the Place of *B*, and managing the *Glaſſes* in the manner I have directed in the firſt Example, you may have a great Variety of different Plans which were not in the former Trials; and the fourth *D* muſt be managed in the ſame manner with the others: So that from one Plan alone, not exceeding the Bigneſs of a Man's Hand, we may vary the *Figure* at leaſt two hundred times, and ſo conſequently from five *Figures* of the like nature, we might ſhew about a thouſand ſeveral ſorts of *Garden-plats*; and if it ſhould happen that the Reader has any Number of Plans for *Parterres* or *Wilderneſs* Works by him, he may by this Method alter them at his Pleaſure, and produce ſuch innumerable Varieties, that it is not poſſible the moſt able Deſigner could ever have contrived.

And ſeeing I have given ſuch Directions in this Chapter, as I hope may inform the Curious of the Uſe of this new invented Inſtrument, I think it may not be improper to advertiſe, that the Publiſher of theſe Papers is provided with *Glaſſes* of ſeveral Sizes ready fitted up for the Experiment, at the following Prices; the ſmall Sort at three Shillings, and the other at five Shillings.

## CHAP. II.

## *Of* Ever-greens, *their Culture and Uſe in Gardens.*

I Am in this Chapter to ſpeak of the Culture of *Ever-greens*, and their Uſe in Gardens. They are ſo ornamental, where they are rightly managed, that I think no Garden can be compleat without them; they make beautiful and uſeful Hedges; and in ſingle *Plants*, when they have been order'd by a curious and ſkilful Hand, they are ſo many growing Monuments of the Art of Gardening. But to come to Particulars, the *Ever-greens*, which are commonly propagated by the Gardeners, are *Hollies*, *Yews*, the *Laurus-tinus*, *Bay*, *Box*, *Laurel*, *Phillyrea*, *Alaternus*, *Juniper*, *Piracantha*, *Ilex*, *Arbutus*, and the *Ever-green Privet*. Theſe have every one their proper Places in Gardens, with reſpect to their ſeveral Stages of *Growth*. Some of them may be kept in ſhape and compaſs with very little trouble, while others are too apt to out-grow the Care of the Gardener, let him be ever ſo vigilant.

### SECT. I.

### *O the HOLLY.*

TO conſider theſe ſingly, I ſhall begin with the *Holly*, which is in my opinion the moſt beautiful of all the reſt. It will grow to a very large Tree. I have ſeen *Plants* of this kind above ſixty Foot high in the *Holly* Walk near *Frencham*

*Frencham* in *Surrey*, in which Place they delight extreamly; the *Soil* is dry, rather inclining to *Sand* than *Loam*. The *Holly* is a *Tap-rooted Plant*, and therefore does not love Tranſplanting, unleſs the Roots have been often pruned in the Nurſery, by digging about it; which a careful Gardener will frequently do, that they may riſe with a Ball of Earth when they are to be removed: But yet notwithſtanding all his Care, it is adviſeable to plant them in Baſkets as ſoon as they are taken up, that the Earth which riſeth with the *Roots* may not break or fall from them in the Carriage from one Place to another. The Baſkets they are planted in, muſt be ſet with them in the Places where they are to remain, and will rot in a few Months, and not any ways hinder the Trees from drawing the Nouriſhment they require from the adjacent Earth, which ſhould be natural Soil (without the leaſt Mixture of *Dung*) and cannot well be too barren. The Removal of this Tree ought to be rather in *September* than towards the Spring, to ſave the Trouble of watering, which oftentimes puts the Gardener to great Charge and Inconveniency. The *Berries* of this *Plant* when they are ripe ſhould be gather'd, and after being laid to ſweat for ſome time, may be put in *Sand* or *Earth*, *S. S. S.* till the *Autumn* following, when they may be ſown in the Nurſery Beds. Now, as theſe will lie in the Ground for a long time before they begin to ſpring, I would adviſe the following Method to be made uſe of, in order to forward their *Germination*, and thereby to gain a Year at leaſt in their *Growth*. I have obſerved that *Seeds* or *Berries* of this kind which have been eaten by Fowls, and paſſed through their Bodies, have begun to vegetate ſoon afterwards; we have therefore no more to do than to contrive a Mixture which ſhall have in it a Heat and Moiſture reſembling that in the

Bodies of Birds, and to lay the *Seeds* in it for a few Days before we ſow them, which will anſwer the End we deſire. For this Purpoſe therefore, provide a Buſhel of *Bran*, in which, after having mix'd your *Seeds* or *Berries*, wet the whole very well with Rain or Pond-water, and let your *Preparation* remain for ten Days without any Diſturbance, in a Veſſel of Wood or Stone. About three Days after the Mixture has been prepar'd, it will begin to heat, and ſo continue to ferment for 30 or 40 Days, if it be carefully ſprinkled from time to time with warm Water as it begins to dry. The Heat of this wet *Barn* will prepare the *Berries* mix'd with it, and put them into a vegetable Poſture in about a Week's time after the Ferment has begun, and then may be ſown in the Nurſery. For this new invented artificial Heat I am beholden to the incomparable Sir *Iſaac Newton*, to whom every Art is greatly obliged.

The young Stocks, which may be thus raiſed from the *Berries*, will be fit to graft on, or be inoculated at four or five Years *Growth*, if they are deſign'd to be train'd up for Ornament of our Garden. The *Grafting* muſt be done in *March*, and the *Inoculating* or *Budding* in *July*; but otherwiſe, if they ſhould be made uſe for *Standard-trees* or *Hedges*, let them be planted at their proper Diſtances while they are very young, that they may the better accuſtom themſelves to the *Soil* they are to grow in. *Birdlime* is made of the *Bark* of this *Tree*, gather'd about *Midſummer*, boil'd about twelve Hours in Spring-water, till the *Green-bark* ſeparates from the others; the *Green* muſt then be laid in a cool Place, and cover'd with *Weeds* or *Fern* for a Fortnight, or till it become a *Mucilage*; then beat it in a Stone Mortar till it be a tough Paſte, and waſh it well in ſome running Water, and then putting it in an earthen

Veſſel to ferment and purge itſelf for four or five Days, waſh it for a ſecond time, and put it into a freſh Pipkin, adding to it one third Part of *Gooſe-greaſe* well clarified, incorporate them on a gentle Fire, ſtirring your Compoſition till it be cold, and keep it in Urine for your Uſe.

Mr. *Evelyn* commends the *Holly* above all other *Plants*, for *Hedges* and ſtrong *Fences*; and indeed was it not for the Benefit of *Wall-fruit*, I ſhould prefer a thick well-grown *Holly* Hedge before any Wall that could be built; the beautiful *Green* of their arm'd *Leaves*, and the Vermilion-colour of their *Berries*, afford a moſt agreeable Proſpect in every Month of the Year, and diſdain the rudeſt Attacks of the Weather, Cattle, *&c.*

Having now ſet down what I think is the moſt material relating to the common or plain-leav'd *Holly*, I am to give ſome Account of the variegated Sorts of *Hollies*, which are ſo much eſteem'd by the Curious, and contribute to the Ornament of our Gardens. Of theſe we have about twenty different Kinds, which are diſtinguiſh'd from one another by the Names of thoſe who firſt diſcover'd them. It would be troubleſome to relate them here, and would be of very little ſervice to my Reader; ſince, in the whole Catalogue of them, it would be impoſſible to diſcover the Beauty or Imperfections of any one among them: Let it ſuffice that every Gentleman pleaſe himſelf, rather by examining them in the Nurſeries, of which there are ſo many about *London.* I ſhall only here take notice, that there are three Sorts of *Stripes* in *Vegetables*; thoſe whoſe Leaves are edged with Cream-colour, thoſe edged with Yellow, and the bloach'd Sorts, as the Gardeners call them. And it is a certain Rule, that whatever Plant has its *Leaves* edged about with theſe diſtemper'd Colours, will always remain variegated, without putting forth ſo much as one plain *green Leaf*; and on the other hand, ſuch Plants as have their *Leaves* bloach'd, tinged or ſpotted in the middle, will ſeldom remain ſtriped, if they be planted in good Ground, but from time to time will ſhoot out Branches entirely green, and at length loſe all their other Colours: From whence we may obſerve that the Sap, when it appears diſcolour'd only towards the middle of the *Leaf*, is not then ſo much diſtemper'd, but that it may be reſtored by wholſome Nouriſhment; but that when the tinged Sap has reached the extream Parts of the *Leaves*, ſo much Venom is then mix'd with it, that it is impoſſible to overcome it by any means; and even the *Fruit*, which is certainly fed with the moſt refined *Juices* of the Plant, is alſo equally corrupted with the ſame Poiſon, as its Stripes plainly ſignify.

Another Obſervation relating to ſtriped Plants, is, that when a Plant begins to bloach, a ſkilful Gardener may provoke the Poiſon which begins to tinge the *Leaves*, and by checking the Nouriſhment of the Plant, and giving it unwholſome Diet, may by degrees unvenom the whole, and produce what they call *an Edger*, *i. e.* a Plant whoſe *Leaves* are edged with White or Yellow. Again, there is another Experiment relating to this Caſe, which is very well worth our notice; it was made and communicated to me by Mr. *Furber*, a curious Gardener and Nurſery-man at *Kenſington*; he had many Plants of the Common *Jeſſamine* with edged *Leaves*, upon which he engrafted Cyons of the *Spaniſh Jeſſamine*, whoſe *Leaves* had not been known to ſtripe: The Cyons of the *Spaniſh Jeſſamine*, upon their budding forth, produced *Leaves* bloach'd with Yellow, and I doubt not but they may be made *Edgers* by the ſame Skill; from which it appears, that when the moſt ſubtle *Juices* of a Plant are poiſon'd, any Plant which ſhall be fed from it ſhould be envenom'd by it. It would therefore be well to ſow the Seed of *Miſletoe* upon *edged-leaved* Plants, to have it with variegated *Leaves.*

What Relation theſe Obſervations may have to Animals, may be farther conſider'd by thoſe whoſe Studies more immediately relate to the Health and Preſervation of Animal Bodies. I ſhall proceed to conſider the ſtriped *Hollies*, with reſpect to their Figure, and Uſe in Gardens.

The Nature of this Plant is ſuch, that it cannot be pruned into thoſe nice Figures, which others, whoſe *Leaves* are ſmall, have been framed to; therefore I cannot propoſe any other Form than that of a Pyramid, or a Ball, or headed Plant. The firſt ought to be kept taper, ending in a ſharp Point on the Top, and the headed Plants of them ſhould be ſo pruned, that their Heads may reſemble the Cap of a *Muſhroon*, which Figure, in my Opinion, is to be preferr'd before that of a *Globe.* Theſe Plants, if they are well train'd up, and have their *Leaves* beautifully variegated, are very ornamental, when they are mix'd ſkilfully with Plants of *Ever-Greens*, ſuch as *Yews*, *Laurus-tinus*, or the like.

I have read ſomewhere of a pretty Invention of planting *Ever-Green Hedges*, with *Columns* and *Pilaſters* of variegated *Hollies* ſet in them at certain Diſtances; which muſt needs have a good Effect if they are well pruned; and I think, if handſome Flower-pots were placed on their Tops, ſo that a healthful Branch might grow through each of them to be train'd into *Balls* or *Pyramids*, it would ſtill contribute to the greater Beauty of the Deſign.

## SECT. II.

## *Of the* YEW-TREE.

THE *Yew-Tree* is very ſlow of growth, and therefore produceth tough and hard Timber: In ſome Parts of *Surrey* we find ſome *Groves* of this beautiful *Ever-Green*, which conſiſt of very large *Trees*, and ſeem rather to be the Produce of Nature than Art; the *Roots* are apt to break into many *Fibres*, and therefore this Plant delights in light Soil, and ſuch as is commonly ſtiled barren: The coldeſt Mountains produce this *Tree* more readily than the richeſt Soils, or more gentle Expoſures, ſo that rich Manures are to be avoided in the Culture of this Plant. The *Berries* of it, after they are clean'd from their Pulp, and well dry'd, may either be laid in Sand, as I have directed thoſe of the *Holly*, before they are ſown, or mix'd with the Bran and Water before mention'd, for their more ſpeedy Germination. The *Leaves* of the *Yew* are ſo ſmall, that it is poſſible to bring this kind of *Tree* into any Form we deſire, as the famous *Plants* now growing in the *Phyſick-Garden* at *Oxford*, and that in the Church-yard at *Hillingdon* near *Uxbridge*, may certify. I have ſeen great Varieties of Figures very well repreſented in *Plants* of this ſort, as Men, Beaſts, Birds, Ships, and the like; but the moſt common Shapes which have been given it by the Gardeners, are either conick or Pyramidal. It is of great Uſe for *Hedges*, and makes moſt agreeable Diviſions in Gardens: It is cuſtomary to fence in the Quarters of Wilderneſs Works with theſe *Plants*, where they have a very good Effect: In a word, there is no Difficulty in propagating this *Plant*, and little Hazard in the

Removal of it, eſpecially if the Roots of it are pruned from time to time by digging about it, while it ſtands in the Nurſery. Its time of tranſplanting is, from *July* to *September*, or as ſoon as the Weather is open in the Spring-Seaſon.

## SECT. III.

## *Of the* LAURUS-TINUS.

THE *Laurus-tinus* is a Plant, whoſe Beauty chiefly conſiſts in the Flowers which adorn it about *Chriſtmas*, and moſt of the Winter-Seaſon; it may be raiſed from the Berries, managed in the ſame Manner as thoſe of the *Holly*; but the moſt expeditious way for the propagating of it, is from *Layers*, *i. e.* by laying down the youngeſt Branches of it in the Earth, about the Months of *September* or *October*, or in the Spring, which will ſoon ſtrike Root, and afford us *Plants* fit for Uſe. It is a quick Grower, but very ſeldom makes a large *Tree*; it is often train'd up to a headed *Plant*, and introduced among *Hollies* and *Yews* into the *Parterre*: But I ſhould rather direct that it be planted againſt a Wall, or in Wilderneſſes, where it may avoid the Knife, for the Sake of its Flowers, which an unſkilful Hand often robs it of, by an untimely Pruning. It is to be noted, that this Plant, like all other Exoticks, is naturally inclined to bloſſom about the time of the Spring, in its own Country. I have particularly obſerved, that all Plants from the *Cape of Good-Hope*, make their ſtrongeſt Shoots, and begin to bloſſom towards the End of our Autumn, which is the time of the Spring in that Part of *Africa* they were brought from; and ſo likewiſe all others, from different Parts and Climates, retain their Natural Courſe of Vegetation; for which

*Plants* ſo injured have their top *Branches* cut off in the Spring, and they will ſhoot out afreſh.

In *Holland* and *Flanders* I have ſeen the *Bay* with its *Leaves* finely variegated. Some Plants of it I have brought into *England*, which I have increaſed by ingrafting *Branches* of them upon our common *Bay*. But I yet have not ventur'd it to ſtand Abroad in the Winter.

## SECT. V.

## *Of the* BOX-TREE.

THE *Box-Tree* is very eaſily propagated, either by *Slips*, *Layers*, or *Seeds*. It is a *Plant* very valuable for its Wood, ſo much uſed for Mathematical Inſtruments, Combs, and ſuch like Works; and the continued *Verdure* of its *Leaves*, makes it an acceptable *Plant* to the Gardener. *Box-Hill* in *Surrey* ſhews us the Excellencies of this *Plant*, as well from the Profit of its Wood, as the pleaſing Shade of the *Box-Trees* growing upon it, which are ſome of them ſo large, as to equal almoſt any other Sort of Timber-Trees. This *Plant* will make delightful *Hedges* in Gardens, and is, next to the *Yew*, the beſt *Tonſile-Tree* for the *Parterre*. As it is a ſlow Grower, and produces a ſmall Leaf, it delights in chalky Mountains, where it will grow much quicker than it does in our Gardens. It is on thoſe Hills where it ſhould be planted therefore for Profit, tho' a natural Soil in a Garden is rather to be preferr'd, if we would keep it in Shape, and within Bounds. The beſt time of the Year to make *Layers* or *Slips* of it, is in *September*, and the *Seeds* of it may be either ſown as ſoon as they are full ripe, or laid in *Sand* during the Winter, to be ſown the Spring following.

The *Seeds* of this Tree, like thoſe of the *Holly*, may be forwarded in their *Growth* by the *Bran* and *Water*.

Beſide the common Sort I have been ſpeaking of, I have ſeen one with variegated *Leaves*, which makes a very beautiful *Plant* for the *Parterre*, if it be kept in good Order.

The *Dwarf*, or *Dutch-Box*, is of extraordinary Uſe for edging or bordering of Flower-Beds, or for the making of Scrawl-Work; it will reſiſt the moſt ſevere Weather, and remain good without renewing for above twenty Years: It is much cheaper than Border-Boards, and far more beautiful; but above all, it is to be admired on Account of the Profit it will bring to the Owner when he ſhall be inclined to ſell it, or tranſplant it. This ſort of *Box*, if it be earthed up every Year, may in four or five Years after Planting be taken up, and parted or ſlipt, and be made to plant about four times as much Ground as that which it ſtood upon. I cannot pretend to ſet down the Price of it, ſince there has not been any certain Standard for its Value. I have bought ſome at 6*d.* *per* Yard, and at another time have paid 8*d.* and a Shilling for the ſame Meaſure; but then we muſt ſuppoſe, that the more we pay for it, ſo much the more Ground it ought to plant when it comes to be ſlipt or parted.

## SECT. VI.

## *Of the* LAUREL.

THE *Laurel* has been uſed for *Hedges*, and ſometimes trained up into headed *Plants*; but is of that Quickneſs in its *Growth*, that I cannot recommend it as a proper Companion for the other *Ever-Greens* before-mention'd. I believe, with Mr. *Evelyn*, that this ſort of *Plant* would do much better to be cultivated as a Standard in *Walks* or *Avenues*, where it may have full Liberty to range, without danger of the Knife. I am of Opinion this Tree will grow to a very large Size, eſpecially when it has been grafted or budded upon *Black-Cherry Stocks*; which Experiment I have ſeen try'd by my curious Friend *Robert Balle*, Eſq; and has anſwer'd very well to the Deſign, and keeps its Leaves all Winter; from whence we may believe, that it is not any particular Quality in the Juices of a *Plant*, which cauſes it to be either Ever-green, or otherwiſe; but that a continual Verdure rather proceeds from certain Veſſels, which convey the Juices from the *Trunk* into the *Leaves* of Trees, which are more in Number, and much ſtronger and tougher in *Ever-Greens*, than in ſuch *Plants* as ſhed their *Leaves* in Winter. But this Caſe I ſhall treat of more amply in another Place.

The *Laurel* may be propagated after the ſame Manner as I have directed for the raiſing of the *Bay*, either from the *Berries*, or by *Layers* or *Cuttings*: It loves Shade, and will thrive in (almoſt) every Soil: It reſiſts the Weather, and has that Bitterneſs in its *Leaves*, that Cattle will not readily annoy it. But Wild-Fowl, ſuch as *Pheaſants*, *Partridges*, *Woodcocks*, *Black-Birds*, and the like, delight to ſhelter themſelves under its Cover in hard Weather; therefore it might be planted in Parks, or other Places of the like Nature, for the Increaſe and Preſervation of Game-Fowl.

## SECT. VII.

## *Of the* PHILLYREA.

THE Nurſery-Men know five Sorts of *Phillyrea*, by the following Names, the *Plain Phillyrea*, the *Bloach'd-Kind*, the *True Phillyrea*, the *Dutch ſilver-leav'd* Sort, and the *Gilded Dutch Kind.* The *firſt* or moſt common of theſe may be propagated from the *Berries*, order'd like thoſe of the *Holly*; or it may, with the other Sorts, be raiſed by *Layers*, which preſently take Root: It delights in a natural light *Soil*, without any Mixture of rich Compoſt. Both this and the *Bloach-leav'd Phillyrea* are very quick Growers, and make tolerable *Hedges*, if they be well ſupported with ſtrong Rails or Stakes; but without ſuch Helps, are not capable of reſiſting the Strength of the Winds; but the *True Phillyrea* is better able to defend itſelf againſt the Inſults of Storms, and its ſlow *Growth* makes it a fit Companion for the beſt *Ever-Greens* in the *Parterre.* I have ſeen *Pyramids* and headed *Plants* of this Sort, which have equall'd in their Beauty any other of the Garden Race; but the *Plain* and *Bloach-leav'd* Kinds are with great Difficulty kept in any Form. The *Dutch Silver-leav'd* and *gilded* Sorts are valuable for the Smallneſs and elegant *Variegations* of their *Leaves*; they may be eaſily trained into any Shape, but cannot abide the Froſt; and therefore not ſo properly the Inhabitants of open Gardens, as the Places of Shelter. The Time of laying the tender Branches of theſe and all other *Phillyreas* into the Earth, is in *September*; by which Means we may greatly increaſe this kind of *Plant.*

## SECT. VIII.

## *Of the* ALATERNUS.

THE *Alaternus* of the Gardeners differs from what they call *Phillyrea*, by being narrower leav'd; and from the *Privet*, by having Notches on the Edges of its *Leaves*. Mr. *Evelyn* gives us one very material Remark of it, *viz.* that the *Seeds* of the *Alaternus* come up in a Month's time after ſowing: He directs it ſhould be planted out at two Years *Growth*, either for *Hedges*, or to be train'd up into figur'd *Plants*. The ſudden *Germination* of the *Seeds* ſhews it not to be a *Phillyrea*, whoſe *Berries* lie a long time in the Earth before they ſprout: It may be increas'd alſo from *Layers*, treated like thoſe of the *Phillyrea*, and delights in the ſame kind of *Soil*.

## SECT. IX.

## *Of the* JUNIPER.

OF the *Juniper*, we have two Kinds known to our Gardeners, the *Common*, and what we call the *Swediſh Juniper*; both of them reſiſt the moſt ſevere Froſt, and for that Reaſon, as well as for their beautiful *Green*, ſhould have their Place among other *Ever-Greens* of the *Parterre*. The Smallneſs of their *Leaves* is ſuch, that an ingenious Workman may train them into any Shape, and by often cutting or ſheering them, they will be ſo cloſe, that no other *Plant* can be ſaid to exceed them in that Reſpect. It delights in barren *Soil*, ſuch as *Heaths* or *Downs*, where I have ſeen the common Kind grow freely and plentifully. The *Berries* ſhould be ſown about *March*, in light Ground, without watering them, or giving them any rich Manure: They come up in two Months after ſowing, and may remain two Years in the *Seed-bed* before they are tranſplanted, taking great care to keep them from Weeds. I remember to have heard of a *Juniper-Tree* above forty Foot high; and I think Mr. *Evelyn* has ſomewhere mention'd one of that ſort which made an Arbour of eleven Foot high in ten Years time. The *Juniper* affords a moſt durable Fire-wood, if it be true what has been ſaid of it, that in a Heap of its *Aſhes*, which have lain a Year, ſome of its *Embers* have been red-hot during all that time.

## SECT. X.

## *Of the* PIRACANTHA.

THE *Piracantha* has many Perfections, which are not found in other *Ever-Greens* of the *Parterre*; and yet, to my great wonder, is very little taken notice of about *London*, inſomuch that I know not any one Nurſery where it is cultivated. Beſides the Beauty of its *Leaves*, the Bunches of white Bloſſoms which it produces in *May*, are very ornamental; and its *Coral*, like Beads, which hang upon it in Cluſters all the Winter, affords us a moſt delightful Proſpect. To all theſe Perfections, we may add the Strength of its *Thorns*, which makes it one of the moſt uſeful *Plants* for *Hedges* that I know of. I have ſeen ſome *Plants* of this kind train'd into *Balls* and *Pyramids*, almoſt cover'd with the ſcarlet Berries, when Nature ſeem'd to reſt in other things; and indeed was I to make a Winter-Garden, this Tree would be no ſmall Contributor to the Ornament of it. But let us now proceed to the *Culture* of this beautiful *Plant*: It may be raiſed either from the *Berries*, or from *Layers* or *Cuttings*. The *Berries*, when they are full ripe, ſhould be order'd like thoſe of the *Holly*, and are ſubject to lie as long in the Earth; but I would adviſe that they be given to Fowls to eat, that by paſſing through their Bodies, they may the ſooner come up, and be better prepared to *vegetate*. In *Devonſhire*, where this Plant abounds, it has been obſerved, that ſuch Fowl as feed upon them, ſcatter them over the Country, where they thrive exceedingly; but are very difficult to tranſplant, having few *Fibres* at their Roots; therefore when they are come up, and have ſtood a Year or two at moſt, they ſhould be planted out where they are to remain. In the Removal of this and other Trees of the like nature, we muſt be careful to keep the Roots from drying, before they are put again into the Ground, leſt by that alone our *Plants* are often loſt. If we would raiſe theſe *Plants* from *Layers*, lay down only ſuch *Branches* as are tender, and of the laſt Shoot; which Rule muſt be obſerved in the laying of all *Ever-Greens* whatever; for the more woody *Branches* will not ſtrike root by any means. About *May* or *June*, we may plant *Cuttings* of the freſh tender *Twigs* in Pots of fine Earth, watering them frequently, and keeping them from the Sun till the following Winter, at which time a warm Expoſure will be helpful to them, and prepare them to make a ſtrong Shoot in the Spring. *Plants* raiſed in this manner may be tranſplanted with greater Eaſe, and leſs Hazard, than thoſe raiſed from *Seeds* or by *Layers*, as I have experienced. The *Piracantha* delights in a dry, gravelly Soil, and will grow to be a large Tree, if rightly managed, and kept from Dung or other rich Manure, which will deſtroy it.

SECT.

## SECT XI.

### *Of the* ILEX.

ALTHO' I have mention'd this *Plant* in the former Part of this Work to be a valuable Tree for Timber, yet I cannot well avoid in this place to take notice of the great Uſe which might be made of it in Gardens. I have ſeen *Pyramid Plants* of it near thirty Foot high, and there are *Hedges* of it now growing in *England* of above that Height, which have been ſown but a few Years ſince. Such Shelter would be much more preferable than the *Dutch-elm* or *Horn-beam*, for the preſerving of *Orange-trees* from the Sun, and Blaſts; and might be made uſe of to defend our Fruit-trees from the Blights which too frequently attend the North-Eaſt Winds of the Spring. See the *Culture* of this Tree in the *Firſt Part*. The *Cork-Tree* muſt be propagated after the ſame manner, and is much like it.

## SECT XII.

### *Of the* ARBUTUS *or Strawberry-Tree.*

THE *Arbutus*, altho' an *Exotic Plant*, thrives very well in our Climate; it is a moſt beautiful Tree, bloſſoming twice a Year, and has its *Fruit* ripe in the Winter; yet notwithſtanding theſe Excellencies, it is little ſought after, perhaps as it is a Stranger, and not ſuppoſed hardy enough to reſiſt our *Froſts*. I have heard of it growing plentifully in *Ireland*, and have ſeen very large Trees of it in ſome Gardens about *London*. The

*Plant* indeed is not ſo well diſpoſed to be train'd up in nice ſhaped *Trees*, as many others, but it makes a moſt agreeable *Hedge*, and is very ornamental in *Wilderneſs-works*. It loves a light, gravelly Soil, and may be raiſed either from the *Seeds* or *Layers*. The *Fruit* (which to all appearance is a *Strawberry*, but rather taſting like the Pulp of a *wild Service)* muſt be gather'd about *Chriſtmas*, and laid to dry for a Month, and then bruis'd and mix'd with Sand, in order to be ſown in Pots of light Earth, and cover'd about a quarter of an Inch with ſifted Mould. This *Work* muſt be done in *March*. The gentle heat of a hot *Bed* will much help the *Germination* of the *Seeds*, which ſhould be frequently ſprinkled with Pond-water till they come up.

The moſt tender Shoots of this *Tree* may be laid down about *September* in fine Earth, and will ſtrike root in a Year's time, if they are kept moiſt by frequent Waterings, but will not be ſtrong enough to tranſplant till the Spring following, and muſt then be kept in the Shade for two or three Months.

## SECT XIII.

## *Of the* Italian *GREEN-PRIVET.*

THIS *Plant* was brought from *Italy* by Mr. *Balle*, among other Curioſities of the like nature; its *Leaves* are not unlike thoſe of the *Olive*; among other Names given it by the *Italians*, it is called the *Olivetta*. This *Plant*, altho' it is a quick Grower, makes an admirable Hedge, if it be often clipp'd; and tho' it be a Foreigner, deſpiſes the Violence of our Froſts, and maintains its Verdure all the Winter. I have not yet ſeen the Flowers of it, but have had many of the *Berries*, which ſomewhat reſemble the *Fruit* of the *Myrtle.* We muſt ſow the *Berries* of this *Plant* in *March*, about an Inch deep in light Earth, watering them frequently till they come up, and tranſplant them from the Seed-bed the ſecond Year after ſowing. I ſuppoſe a hot, gravelly Soil to be the moſt proper for it, having planted it in that ſort of Ground, where it has made Shoots of four Foot long in one Summer.

Now, beſides the *Ever-Greens* I have mentioned for *Hedges* and *figur'd Plants* agreeable to *Parterre* Works, it may not be amiſs to take notice of ſuch others as I have ſeen propagated by the Curious for different Uſes; the *Olive*, *Lentiſcus*, and the *Piſtachio*, may be planted againſt Walls expoſed to the South Sun, and will thrive very well without other Shelter. I remember to have ſeen perfect Fruit of the *Olive*, in Mr. *Darby*'s Garden at *Hoxton*; and I think alſo, in the Gardens belonging to the Biſhop of *London* at *Fulham:* And I am of opinion, it is a *Plant* hardy enough to maintain itſelf in our Climate without any Shelter; which would be very well worth our Trial. It is propagated by laying down the young *Branches* in the *Earth* about *March.*

The *Lentiſcus* is a *Plant* commonly kept in Greenhouſes, but is ſometimes planted againſt a warm Wall, without doors. It is raiſed from the *Berries*, which are brought from *Italy*, and other Places in the *Mediterranean Sea.* The *Piſtachio* likewiſe is a *Plant* which will thrive well enough in our Climate, and may be either raiſed from the *Nuts*, or *Suckers*, managed as the *Ever-Greens* I have mentioned before. This laſt *Tree* is commonly planted againſt a Wall, and in that Station I have ſeen it bear Fruit at the late Biſhop of *London*'s Gardens at *Fulham.* I have ſeen it alſo growing in the Wilderneſs belonging to the Earl of *Peterborough* at *Parſon's-Green*, where (altho' it bore Fruit plentifully)

fully) the Name of it was not known till laſt Year.

The ſeveral Kinds of *Firs* are likewiſe ornamental in *Wilderneſs-works*, and are beneficial in *Sylvan Plantations*: There are many Kinds of them, which are all raiſed from Seeds ſown in *September*: They will grow in any Soil, and ſhould have their *Collateral Buds* broke off while they are young and tender, by which means the *Timber* will be free from Knots.

In the next place the *Cypreſs*, *Lignum Vitæ*, and *Cedar of Libanus*, with others of the like nature, may be propagated as the former for *Wilderneſs-works*.

And now, as I have ſet down the Culture of all Sorts of *Ever-Greens*, which the Curious may deſire to propagate for *Parterre* or *Wilderneſs-works*, I ſhall conclude this Chapter with a word or two concerning *Graſs Turfs*, for *Verges*, or *figur'd Works*, in Gardens; which I think cannot be ſo properly ſomewhat ſhelter'd from the ſcorching Heat of the Sun, which is too apt to tarniſh them. I ſhall now proceed to ſpeak of ſuch Flowering *Trees* and *Shrubs* as are proper for the adorning of Gardens.

## CHAP. III.

### *Of* Flowering-Trees *and* Shrubs, *their Culture and Uſe in Gardens.*

AS I eſteem *Flowering-Trees* and *Shrubs* to be the next after *Ever-Greens*, which a curious Perſon would be deſirous of propagating in his Garden; ſo in the Culture of them I ſhall be no leſs particular than I have been in the foregoing Chapter of the Management of *Ever-Greens.*

I ſuppoſe no one is ignorant that the greateſt Part of theſe *Flowering-Trees* and *Shrubs*, which are at this time ſo well known to our Gardeners, are *Exotics*; and it is well worth our Enquiry what Climes they were firſt brought from, that for the better Embelliſhment of our Gardens, we may ſtill ſeek after many other Varieties of the like Kinds, in thoſe Countries whoſe natural State of Weather moſt nearly reſembles the Properties of our Climate.

I find that *Plants* of *Virginia*, and even thoſe of the *North* Parts of *Carolina*, will bear our Froſts, if they are managed with Judgment. The *Tulip-Tree*, for inſtance, which flouriſhes ſo well in the Earl of *Peterborough*'s Wilderneſs at *Parſon's-Green*, is a *Virginia Plant*, and yet finds no difference between the Degrees of 38 and 52. In its native Country, it is an Inhabitant of the Woods; and in my Lord *Peterborough*'s Garden flouriſhes in a Wilderneſs: But I have known it planted in a much warmer, and more open Expoſure, and it has periſh'd. This ſhould be always conſidered by the Gardener, to plant every *Tree* in a Wood which is natural to a Wood, and upon a Plain that which is the Native of a Plain. I might here ſet down the moſt proper Method for bringing over ſuch curious *Plants* as grow in foreign Countries into *England*, and might give ſome Rules for the naturalizing them when they are with us; but as I have now by me ſome Papers purely relating to the Culture and Management of *Exotic Plants*, which I am perſuaded to make publick, I muſt crave my Reader's Patience till I preſent him with all that I know relating to that Subject, and at preſent only give him the neceſſary Direction for the Management of thoſe *Foreigners* which are already naturalized to our Country.

The *Plants* which will make the Contents of this Chapter, as the moſt worthy our Care, are the *Jaſmines*, *Honey-Suckles*, *Lilac*, *Syringa*, *Roſes*, The time of laying the young *Shoots* of this *Plant* into the Earth is about *September*, and at that time we may likewiſe plant *Cuttings* of it about a Foot long, always taking Care that two *Knots* be under Ground, for it is juſt below the *Buds* that the *Roots* ſpring forth, *i. e.* from the Place where the *Leaf* of that Summer had join'd itſelf to the *Branch.* This *Plant* is ſo delightful, that I think no curious Perſon can be without a large *Plantation* of it, either to plant againſt *Walls* or *Trees*, or elſe to train up into *headed Plants.* I have ſeen this Sort of *Jaſmine* planted in *Hedges* of *Dutch Elm* and *Hornbeam*, curiouſly intermixing itſelf with them, and yielding a moſt agreeable Entertainment to the Owner, by means of its pretty *Bloſſoms*, and their delightful *Odour.* When it is train'd into *headed Plants* and kept in Pots, it ſerves to adorn the Chimneys in the Summer Months, and it is alſo of Uſe to ingraft the *Spaniſh white Jaſmine* upon, or thoſe of its own kind with *Variegated Leaves.*

The *Yellow Jaſmine* has its *Leaves* more ſhining than the former, and its Flowers not much unlike thoſe of the *Yellow Indian Jaſmine.* I have ſeen but few *Plants* of it about *London*, altho' its Beauty is in my Opinion, ſurpaſſing the former; it is hardy enough to endure the moſt ſevere Weather of our Clime, and may be propagated from *Layers* like the other. I remember to have ſeen it proſper well againſt a *Wall* in a light ſandy *Soil*; and I am apt to believe the *Indian Jaſmine* might be grafted upon it as the Smell, Colour and Make of both their *Flowers* are ſo nearly the ſame, which ſeems to inform us, that the Parts and Juices of one and the other are alike; for if a Flower contains the moſt refined *Juices* of a *Plant*, and if it is allow'd that the Odour of that Flower proceeds from certain Vapours ariſing from the *Juices* contain'd in it, then it ſeems reaſonable to believe, that when we meet with Flowers of different *Plants*, which touch the Organs of Smelling in the ſame Manner, the *Juices* of each of them muſt then be alike, and the *Veſſels* and *Glands* through which they have paſs'd from the *Root*, muſt be nearly the ſame either in Figure or Quality, and ſometimes in both.

The *Perſian Jaſmine* bears Flowers of a Purple Colour, but ſeldom makes a large *Plant*; it will bear the Weather, and make a pretty Show in Wilderneſs Works, among other flowering *Shrubs*; it may be raiſed from *Layers* or *Suckers*, and loves a light *Soil*; alſo it may be budded upon the *Lilac*.

## SECT. II.

## *Of the* WOODBIND, or Honey-Suckle.

*Oak*, and the like. Now altho' the *Honey Suckle* is a *twining Plant*, like the *Jaſmine*, yet it may be train'd up into a *Standard*, and has an admirable Effect, as a *headed Plant*, in the moſt remote Parts of *Parterre* Work; for to plant it among *Ever-Greens*, in or about the Center of ſuch a Garden, would wound the Proſpect for many Months of the Year, when it was vacant of Leaves.

If I may be allow'd to direct the Fancy of other People, I would adviſe that every Sort of Flowering *Shrub* ſhould be train'd into *headed Plants*, and planted in Garden Pots, that when they are in *Flower* they may be ſet in the Borders between the *Ever-Greens*, and removed as ſoon as their *Bloſſom* is over, to make Room for others.

## SECT. III.

## *Of the LILAC.*

OF the *Lilac* there are two Sorts, commonly known to the Gardeners by that Name, *viz.* the *Blue* and the *White*. The *Botaniſts* indeed call the *Lilac* by the Name of *Syringa* or *Pipe-Tree*, but the Gardeners give the Name of *Syringa* to another *Plant*; therefore as my Deſign here is chiefly dedicated to the Uſe of Gardeners, I ſhall call every *Plant* by the Name they know them by, and at the End of my Work endeavour to reconcile the *Botaniſt* with the *Gardener*, by an *Index* of Names in *Latin*, *Engliſh*, and other *Languages* now in Uſe. The *Lilac* then is a *Plant* which grows to a pretty large *Tree*, bearing its Bunches of *Blue*, or rather *Purple Bloſſoms*, like Plumes of *Feathers*, in *May*: I know not any Sight more agreeable than this *Tree* when it is full of *Flowers*, and altho' it is very common, is well worth our propagating. Small

Walks of theſe *Trees* are very pleaſant, and they are no leſs Ornamental in the Quarters of *Wilderneſs Works*, eſpecially if the *White* Flowering Kind be judiciouſly intermix'd with them. They may be raiſed by laying down the young *Branches* in *March*, or by taking off the *Suckers*, and planting them in a light *Soil* in the ſame *Month*, or about *September*.

## SECT. IV.

### *Of the SYRINGA.*

THE *Syringa* has two Qualities, which were taken Notice of by that learned and curious *Botaniſt* Dr. *Compton*, the late Biſhop of *London*, *viz.* that the *Leaves* taſted like *Green Cucumbers*, and the *Bloſſoms* had the Odour of *Orange-Flowers*. This *Shrub* is propagated as well for Wilderneſs Quar-

## SECT. V.

## *Of the* ROSE-TREE *and its Kind.*

WE have more Variety of *Roſes* propagated by our Gardeners, than of any Flowering-*Tree* or *Shrub*; the Flowers are moſt delightful for their agreeable Odour and Beauty. I have ſeen one or other of them Bloſſoming for ten Months of the Year, without uſing any great Art to alter the natural Seaſon of their Blowing. The Gardeners diſtinguiſh them by the following Names; firſt, the *Cinnamon Roſe*, which is the moſt forward Blower: The *Monthly Roſe*, and the *Cluſter Monthly Roſe*, which, if they happen to be planted againſt a warm Wall, will begin to blow about the latter End of *March*, or the Beginning of *April*, and continue to produce *Flowers* for almoſt three Months; and if after they are out of *Flower*, they have the Tops of their Branches pruned off, we may expect a ſecond Crop of *Roſes* from the ſame *Trees* in *Autumn*, which will continue their *Bloſſom* almoſt till *Chriſtmas*, if the Weather be open. The next after theſe is the *Damaſk Roſe*, which will begin its *Bloſſoms* in *May*, and continue Flowering for above ſix Weeks. The *Roſamundi*, or *York* and *Lancaſter Roſe*, with the *White*, *Red*, and *Yellow Roſes*, begin their *Bloſſom* ſomewhat later than the *Damaſk*. And laſt of all, the *Centifol* or *Province Roſe*, ſhews us its ſurprizing *Flowers*; but beſides the ſeveral Sorts which I have here ſet down, there are many others which I have not yet ſeen. That curious and incomparable Patroneſs of Botany, the late Dutcheſs of *Beaufort*, has told me of ſixteen different Sorts, which her Grace cultivated in her Gardens at *Badminton*; but altho' the ſeveral Sorts of *Roſes* differ in their Times of *Flowering*, yet are they all propagated after the ſame manner; they love a ſtrong holding Ground, and delight ſo much in moiſt Places, that they will even grow in Water: They may either be raiſed from *Layers* or *Suckers*; the firſt may be lain down in *September*, and the *Suckers* may be taken from the old *Roots* in that Month, or about *March*, and tranſplanted immediately before their *Roots*, which have but few *Fibres*, grow dry; but in caſe Neceſſity obliges us to keep them out of the Ground for ſome time, lay their Roots in Water for five or ſix Hours before *Planting*. The *Roſe-Tree* may be either cultivated for the Quarters of Wilderneſs Works, to be planted there among other *Flowering Shrubs*, or train'd up into *Standard Plants* for *Pots*.

## SECT. VI.

### *Of the* GUILDER-ROSE.

THE *Guilder-Roſe* bears its Bunches of *White Bloſſoms* (as big as a large *Tennis-Ball*) in *May*. The *Plant* ſeldom riſes very high, or is capable of being kept in a regular Form, therefore is chiefly propagated for *Wilderneſſes*, or other wild Places. It delights in a holding Land, and may be raiſed from *Suckers* taken from about the old *Roots*, either in *March* or *September*. I am told that this *Plant* may be grafted upon the *Elder*.

## SECT. VII.

### *The* SPANISH-BROOM.

THE *Spaniſh Broom*, altho' there is no great Beauty in its *Leaves*, yet the *Spikes* of *Yellow*

*Flowers*, which it puts forth in *June*, makes it a *Plant* very deſirable in our Gardens. It is an irregular *Plant*, by no means to be brought into any Form by the Gardener. It may be planted in Wilderneſs Works with other Flowering *Shrubs*, among which it makes a great Shew. We may raiſe it from *Seeds* ſown in *March* in light Earth; and alſo by laying down the tender Branches in the ſame Month, and cutting them at the Joints, after the Manner of *Carnation Layers*: But this laſt Way is not ſo certain, and more troubleſome than the raiſing of them from *Seeds*.

I cannot forbear taking Notice in this Place of the common *Engliſh Broom*, and the *Furze-buſh*, as *Plants* well enough worthy our Care; the firſt to mix with the *Shrubs* of the Wilderneſs, and the other to be trained into *Figured Plants*; theſe are both raiſed from *Seeds* ſown in *March*, and will not bear tranſplanting after they are one Year old, without great Care. I have ſeen ſome *Plants* of the *Furze-Buſh* cultivated in Gentlemens Gardens, not any ways inferior to the Beauties of the moſt valuable *Ever-Greens*. It is tonſile as the *Yew*, and in my Opinion exceeds it in one Reſpect, *i. e.* that it bloſſoms in all Seaſons of the Year; and was it not ſo common, I doubt not but it would be more frequently planted in our Gardens than any other *Ever-Green*. If it be kept well cut, it makes moſt beautiful and impenetrable Hedges.

## SECT. VIII.

## *Of the* LABURNUM.

THE *Laburnum* is an agreeable *Shrub*, or rather a little *Tree*. I have ſeen it above twenty Foot high, cover'd with its beautiful Strings of yellow Flowers in *May* and *June*, and yielding

Plenty of Fruit, which ripens about *September.* This Plant reſiſts our ſevereſt Froſts, and will grow in the moſt open Expoſure, as well as under the Shade of large *Trees:* It is commonly planted among the other Flowering *Shrubs* of the Wilderneſs, and may be eaſily raiſed from the *Seeds* ſown in *March*, and tranſplanted without Difficulty two Years after it is come up.

## SECT. IX.

## *Of the* MEZEREON.

THE Gardeners know two Sorts of *Mezereon*, *viz.* that with the *Red Flower*, and the *White Flowering Sort:* The firſt is common enough in every Garden, but that with the *White Flower* is rare; they are both of them *Dwarfs*, ſeldom riſing higher than three Foot, but have two Excellencies which make them more valuable than much taller *Trees:* Their *Stalks* are cloathed with the *Flowers* in *January*, and the Air is then perfumed with their delightful *Odours:* They remain a long while in *Bloſſom*, and are afterwards no leſs beautifully adorn'd with their *Fruits.* I know no other way of propagating them, than by ſowing the *Seeds* in *March*, if you can ſave them from the devouring Birds which delight in them. I have eat ſome of the *Berries*, which were not unpleaſant to the Taſte, but about an Hour after I had ſwallow'd them, I found an extraordinary Heat in my Throat, which cauſed a violent burning Pain for above twelve Hours. It would be well enough worth our Enquiry, Whether the *Seeds* of all forward blowing *Plants* are not hot, in proportion to thoſe of the *Mezereon?* and, whether their extraordinary Heat is not one Means of their early *Sprouting?*

*ſprouting ?* This *Plant* may well enough be introduced into the *Parterre*, as it is a ſlow Grower, or in *Wilderneſs-works* for its delightful *Bloſſoms*, but chiefly into a *Winter-garden*. A loamy *Soil* is moſt proper for it.

## SECT. X.

## *Of the* SPIRÆA FRUTEX.

THIS *Plant*, known to the Gardeners by the Name of *Spiræa Frutex*, bloſſoms about *Auguſt*, yielding Spikes of Flowers of a Pink-colour: The *Shrub* ſeldom exceeds three Foot in height; it is beautiful in its *Flower*, and is a *Plant* which ſhould not be wanting in a Garden. It may be propagated from *Suckers* taken off in *March*, and planted in a light *Soil*.

## SECT. XI.

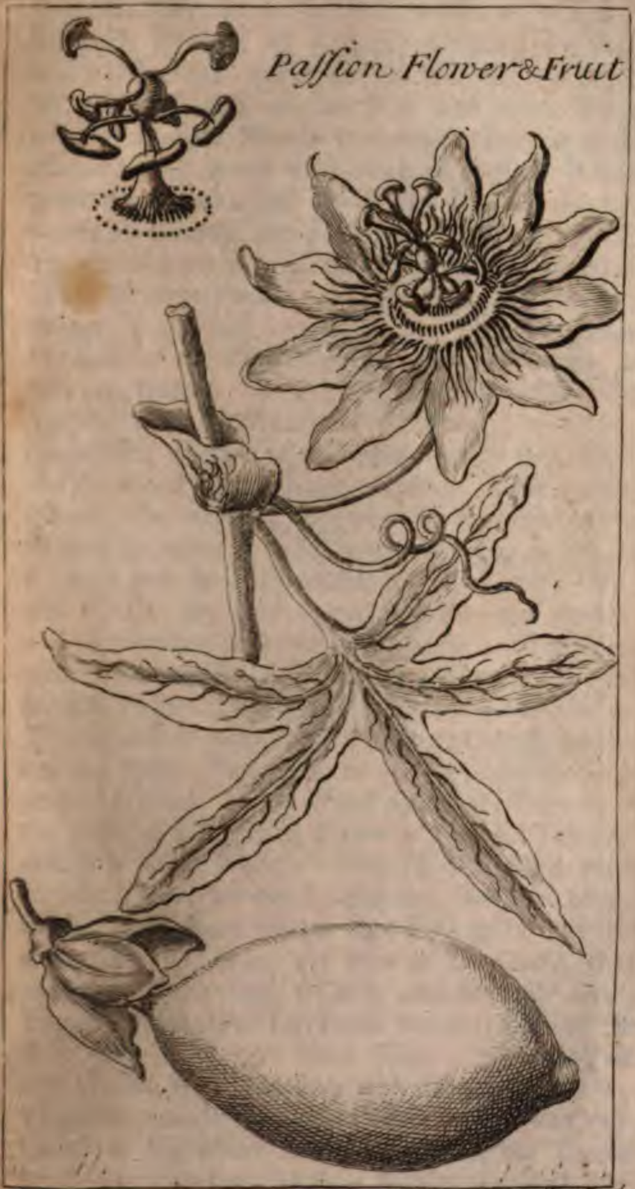
## *Of the* ARBOR JUDÆ.

THIS *Plant* is very common in the moſt *Southern* Parts of *Europe*, but I have received the *Seeds* of it alſo from *America*, (I think from *Virginia.*) I have ſown them in *March*, and raiſed great numbers of them, and they are now common enough in moſt curious Gardens. This *Plant* will riſe very high, even to a pretty large *Tree*; but is more frequently planted againſt a Wall with us, than in the open Ground. It bears its beautiful Roſe-colour *Bloſſoms* in Cluſters about *March* or *April*, even before the *Leaves* are open'd. Dr. *Compton*, the late learned Biſhop of *London*, eat of the *Flowers* in his Sallets, and had a very large Plant of it againſt a Wall in his Garden. The *Plant* is hardy enough to reſiſt our Froſts, and I doubt not but would do well in *Wilderneſs-works*, among other flowering *Shrubs*. It loves a loamy *Soil*.

## SECT. XII.

## *Of the* MARACOC, *or* PASSION-TREE.

THERE are ſeveral Sorts of *Paſſion-Trees*; ſome of them *Ever-Greens*, others *Perdifols*, others dying to the Root every Winter, and others which are annual *Plants*. I have reckon'd near thirty Sorts of them at the Phyſick-Garden at *Amſterdam*, where were the greateſt Varieties of them that ever I have ſeen. But as it is not my Purpoſe here to particularize any ſort of *Plant*, which is not capable of reſiſting the Weather of our Climate without Shelter; ſo I ſhall only take



Paſſion Flower & Fruit

Plate 4 Pag. 98 pt. 2d

about the Bottom of the *Stile* two Rows of *Stamineous-like* Threads of a *purple* Colour; the *Stile*, which ſomewhat reſembles the Pedeſtal of a Pillar, divides itſelf on the Top into three Parts, which turn their Mouths towards the Bottom of the *Flower*; they are of the Colour of *Indigo:* Beſides theſe three *Tubes*, juſt below that Part of the *Stile* where they unite, are placed five *Stamina*, ſpreading themſelves in a Star-like Figure, with yellow *Apices* on their Points. At the Footſtalk of every *Flower* is a *Whirle* or *Claſper*, and to that is joined the *Leaf* of the *Plant* deeply cut on the Edges, as here repreſented. It is called the *Paſſion-Tree*, for that by the Contrivance of the *Friars*, who, in a counterfeit Figure of it, when it was firſt diſcover'd, added ſome things wanting in the natural *Flower*, they made it, as it were, an Epitome of our Saviour's Paſſion. The Story perhaps, as I have it, may not be unacceptable to my Reader: The ten *Petals*, ſay they, repreſent the ten *Apoſtles*, and at the ſame time put the Queſtion, that there were twelve: But they anſwer, That *Judas* had hang'd himſelf, and *Peter* had deny'd his Maſter. The *Stamineous-like* Parts which ſpread themſelves on the *Flower*, they liken to a *Glory*; and the ſmall *purple Threads* which ſtand round the Bottom of the *Stile*, is a ſuppoſed *Crown of Thorns*. The *Stile* which is in the Middle of the Flower, ſerves them for the *Pillar*, to which, they ſay, the *Jews* bound thoſe Malefactors whom they ſcourged; and that they may not want any part of the Story, they turn the *Claſper* into a *Cord*, and the *Leaf* into a Hand. The three Diviſions on the Top of the *Stile*, they turn into three *Nails*; and taking off one of the five *Stamina's* with its *Apex*, call it a Hammer, and the *four* others remaining make a *Croſs*; the three *Alabaſtries* at the Bottom of the Flower are ſaid to repreſent the *three Soldiers* who caſt lots;

and the Time between the *Opening* and *Shutting* up of every *Flower* being juſt *three* Days, is enough to compleat the Story. Thus ſuperſtitious Perſons *ſemper ſibi ſomnium fingunt.* The old Herbaliſts have mention'd ſomewhat of this Story, but I found it mightily improved when I was at *Bruſſels*, even beyond what I have here mention'd.

But, to proceed to the Culture of this *Plant:* That it may bear Fruit, we muſt plant it in very moiſt and cool Places, where it may be continually fed with Water: This I learn'd from a Letter from the *Weſt-Indies*, wherein it was made an Inhabitant of *Swampy* Places. I have ſince that time ſeen a Tree of this ſort with above three hundred ripe Fruits upon it, at Mr. *Greening*'s, Nurſery-man at *Brentford*, which was planted in Cow-dung, and had, from time to time, the Place about it renewed with the ſame cooling Soil: And likewiſe it has ripen'd Fruit at Mr. *Fairchild*'s at *Hoxton*, whom I have ſo often had occaſion to mention. The Fruit were ſhaped like Lemons, and of the ſame Colour; they were filled with a beautiful red Pulp and Seeds, like the Fruit of a Pomegranate, and were not diſagreeable to the Taſte: But the largeſt Fruit of this *Plant*, which I have yet ſeen, was ſent ſome time ſince to the *Royal Society*, by a Curious Gentleman, I think, living ſomewhere in the *Weſt* Part of *England*, with an Account of his Method of raiſing them. He had a large *Tree* againſt one Side of his Houſe, which happening to grow over a Drain which went from his Kitchen, and lay ſo ſhallow, that the Roots of this *Paſſion-Tree* found their way into it, the *Tree* then began to produce Fruit.

From theſe Obſervations, I was inform'd of the moſt proper Way to cultivate this *Plant* for the Production of its Fruit; and the Directions I have given to ſeveral of my Friends to lay plenty of Cow-dung about the Roots, and even then to keep it frequently water'd in the Flowering Seaſon, has been ſufficient to ſhew them Fruit enough to ſatisfy their Curioſity.

We may raiſe this *Plant* either from the Seeds ſown in *March*, or by Layers in the ſame Month; and every Cutting of it about *May* or *June*, will ſtrike root, if they be planted in fine Earth. It is ſo quick in its Growth, that I have ſeen ſome Branches of it about 18 Foot long in one Summer, and is ſo hardy, that the moſt ſevere Froſts of our Clime will not deſtroy the Roots, altho' perhaps the *Plant* to all appearance has periſhed above Ground. In the laſt great Froſt, I began to deſpair of two very large *Plants*, which ſtood abroad, and were even cut down to the Ground, without hope of Recovery; but the *May* following, from the Fibres only which remain'd, there ſprung up above 50 ſmall *Plants* from each Root. We muſt remark, that it is only the ſmall Shoots of this *Plant* that produces Flowers; ſo that in the Nailing and Pruning of this *Tree*, we muſt be ſure to leave ſome of theſe to have early Bloſſoms; for 'tis from the early Bloſſoms we may only expect Fruit.

## SECT. XIII.

## *Of the SENNA.*

THERE are ſeveral Kinds of *Senna* diſtinguiſh'd by various Names among the Gardeners; but there are only two Sorts of them which are commonly known and made uſe of, *viz.* the *Scorpion Senna* and the *Bladder Senna*: The firſt is, in my Opinion, the moſt beautiful, and deſerving of our Care, the *Bloſſoms* ſhewing themſelves as well in Autumn, as in the Spring Seaſon: They both make pretty *Shrubs* for Wilderneſs-works, and may be propagated for that Uſe, either by ſowing the *Seeds* towards the latter End of *March*, or by *laying* down the tender Twigs in the Earth, in *April* or *May*; which ſoon ſtrike *root*, and may be tranſplanted without difficulty. They love a *loamy Earth*, and grow well in the *Shade*.

## SECT. XIV.

## *Of the TULIP-TREE.*

I Have already ſaid ſomething of this *Tree* at the Beginning of this Chapter, eſpecially concerning that now growing at my Lord *Peterborough*'s. It is a *Plant* of the Wood, and will not proſper abroad in a more open Expoſure ;

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Mr. *Fairchild* ſowed the Seeds of them in Pots, about *Auguſt*, and ſet them under Shelter all the Winter; the Spring following they came up without the help of a hot Bed. This Time of ſowing the Seeds is neceſſary to be obſerv'd; for I have often try'd them in the Spring, but could not raiſe them at that Seaſon. The young *Plants* may be tranſplanted into ſingle Pots at two Years Growth, and muſt have Shelter in the Winter for the firſt nine Years at leaſt, till they have Strength enough to reſiſt the Severity of our Froſt; they may then be planted in the natural Ground, as I have directed, but rather in a ſandy Soil than any other.

## SECT. XV.

## *Of the* POMEGRANATE.

WE know two Sorts of this *Plant*, viz. that with the ſingle Flower, and the double Bloſſom-kind: They are both hardy enough to withſtand the Severities of our Winters, and are propagated by laying down the young Shoots in *March*. The Bloſſoms of each of them are of a moſt beautiful ſcarlet Colour, the ſingle ones ſetting frequently for Fruit, and ſometimes ripening with us. I have ſeen ſome headed *Plants* of each Sort; but I rather adviſe them to be planted in Hedges or Wilderneſs-works, where they may be in leſs danger of the *Knife* or *Shears*. Some have made *Arbours* of them, which have been extremely pleaſant. Theſe *Plants* love a light Soil, and may be tranſplanted either in the Spring or Autumn Seaſon.

## SECT. XVI.

## *Of the* ALTHÆA-FRUTEX.

WE find two Sorts of this *Plant* (commonly) in the Gardens, differing from each other in the Colour of their Flowers, the one white, and the other purple: They may be propagated from Layers in *September*, or Suckers taken from about the Roots at that time, and likewiſe from the Seeds ſown in *March*, and are uſed chiefly in Wilderneſs-works. The Bloſſoms appear in *Auguſt* in great numbers, and afford a delightful Proſpect: They will grow in any Soil, with little trouble to the Gardener.

## SECT. XVII.

## *Of the Double-bloſſom'd* Virgin's-Bower, *the* Maxechitle, *or* Scarlet Jaſmine, Perwinkle, *and* French Willow.

THE firſt of theſe, *i. e.* the *Virgin's-Bower*, may be raiſed from Layers in *September*, and ſome ſay, from Cuttings likewiſe: The Flowers are of a Violet-colour, and appear in great numbers, almoſt covering the *Plant*: It loves a light Soil; and as it is of a twining nature, muſt be ſupported with Stakes. It may either be planted againſt a Wall, or ſet among the other Flowering Inhabitants of the Wilderneſs.

The *Maxechitle*, or *Scarlet Jaſmine*, is by ſome Gardeners called the *Trumpet-Flower*: It is alſo a twining *Plant* like the former, and may be raiſed either from *Layers* or *Cuttings* in *September*. The

*Flowers*, which it produces in abundance about *May* or *June*, are rather of an *Orange* Colour than a *Scarlet*; it is commonly planted againſt Walls, tho' I am apt to believe it might maintain itſelf in Wilderneſs Works, or more open Places. This alſo loves a light *Soil*, and frequent Waterings in the Summer Seaſon.

There are ſeveral Sorts of *Perwincle* cultivated by the Gardeners; it is a creeping *Plant*, eaſily ſtriking *Root*, if it be laid in the Earth about *March*, or will grow of *Cuttings* planted in *September*. Its pretty *Blue Flowers* make an agreeable Shew in the Summer. This *Plant* indeed hardly deſerves the Name of a *Shrub*; but as it is not ſtrictly of the *Herbaceous Race*, I take the Liberty to ſpeak of it in this Chapter; and becauſe, when it is ty'd up to Stakes, it may very well be reckon'd a fit Companion for *Flowering Shrubs:* This, with the reſt, may be planted in *Wilderneſs Works*, and in *Pots*, (for the Ornament of *Parterres)* to prevent the too great Increaſe of its *Suckers*, which would be apt to over-run the Borders. It delights in moiſt Ground and Shade.

The *French Willow* is alſo one of the Dwarfs of this Chapter, and is rather a greater Increaſer than the former, produces incredible Numbers of *Suckers* about the *Root*, which may be taken off and tranſplanted, either in the *Spring* or *Autumn* Seaſons: If we plant it in *Wilderneſs Works*, it will ſoon over-ſpread the Ground; but if it be deſired in the *Parterre* for the ſake of its pretty Pink-colour *Flowers*, the *Roots* muſt be confined in *Pots*.

Thus I think I have mentioned every ſort of *Flowering Shrub* and *Tree* known to the Gardeners, and have given ſuch Directions for their *Culture* and Management in Gardens, as I have myſelf experienced. I might indeed have added to them the *Barberry* and *Almond*, which produce ſuch agreeable *Flowers*; but as thoſe *Trees* are chiefly celebrated for the *Fruits* they bear, ſo I ſhall not take any further Notice of them, till I ſpeak of *Fruits* in general. I ſhall conclude this Chapter with taking Notice once more, that every one of the *Flowering Shrubs* I have mentioned, may be cultivated in *Garden Pots*, and ſo placed from time to time, as they *bloſſom*, in the Borders; by which Method a Gardener may change the Face of his *Parterre* every Week, and ſupply it conſtantly with freſh Beauties.

## CHAP. IV.

### *Of the* Perennial Flowers, *the talleſt Blowers.*

I Intend in this Chapter to ſpeak of ſuch *Flowers* as remain for many Years in the Ground, *Growing*, *Bloſſoming*, and *Increaſing*; and as they are moſt of them ſuch as will riſe to a conſiderable Height, are therefore the moſt proper to be planted in the middle of Borders, and chiefly in large Gardens. I ſhall ſet down, as near as I can remember, their ſeveral Heights, and recommend that they be planted in Places proportionable to their ſeveral Altitudes, that if it is poſſible one may not find ſuch intolerable Miſtakes as are frequently committed in many Places, of planting Dwarfs in the midſt of a Border, and ſome of the moſt Gigantick Kinds of *Flowers* for *Edgings*; but that in the planting a Border or Bed of *Flowers*, we may judiciouſly mix the ſeveral Sorts, ſo as to have not only ſome of them in *Bloſſom* every

Month of the Year, but that they may be ſo diſpoſed as to appear gradually one above the other, and add Beauty to each other by their Variety of Colours; for which End I ſhall add a Figure of a Bed of Earth four Foot wide, divided in the Manner I propoſe, and ſet down the proper *Flowers* allotted for each Diviſion of it, when I have mentioned the ſeveral Sorts, and their *Culture.*

## SECT. I.

BIBLIOTHECA BODLEIANA

## *Of the* HOLYOCKS.

THIS *Plant*, as it is always rais'd from *Seeds*, ſo are the *Flowers* commonly different from each other. I have ſeen about ten ſeveral Sorts of them in one Garden, which if the Syſtem of the *Generation* of *Plants* be true, may happen from accidental coupling of one with the other: Their *Flowers* are commonly double, and ſo cannot perhaps be very eaſily impregnated with other *Farina* than their own, otherwiſe we might have had many more Varieties of them: However, as they are, they neither want Beauty nor Stature, ſeldom bearing their Flower Stems leſs than ſix Foot high from the Ground, which are commonly garniſh'd with their Roſe-like *Bloſſoms* above half their Height. Their *Seeds* are ſown in *March* in the natural *Earth*; and tho' they do not lie long in the Ground before they come up, yet they produce no *Flowers* till the following Year. They may be tranſplanted about *September* or *March*, and will begin to flower in *July* or *Auguſt*: They require a rich Earth, and frequent Waterings in the Summer, to make them large. Theſe remain good ſeveral Years, and may for their Duration, as well as their Magnitude, take place among the Flowering Shrubs in Wilderneſs-works, or be planted in Lines in Avenues of Trees, where Cattle cannot come to deſtroy them; ſometimes in the moſt remote or open Parts of large Gardens, where their *Red*, *White*, *Purple*, or *Black* Flowers, afford a beautiful Proſpect. They die to the Ground every Winter, and ſhoot out again the following Spring; and I am inform'd, that ſome have increas'd them by parting their Roots in *March*.

## SECT II.

### *Of the* Perennial Sun-Flower.

THIS *Plant* bloſſoms about the ſame time with the former, and will bear its *Flower-ſtems* near ſix Foot high, if it be encouraged with rich Earth, and well watered in the Summer Months. The yellow *Flowers* which it produces, reſembling ſo many *Stars*, are very delightful, but are not ſo large as thoſe of the *Annual Kind*. It may be propagated from *Seed* ſown in *March*, or *Slips* of the *Root* taken off at that time, and tranſplanted. The Summer *Shoots* of this *Plant*, like thoſe of the former, always periſh at the Approach of Winter, and are ſucceeded by others in the following Spring. It will grow in the Shade and almoſt any Soil, and is even capable of reſiſting the Smoke of *London*, where it is often cultivated in Pots. It may be planted as a Companion with the *Holyock*.

## SECT. III.

### *Of the* Aſters *or* Star-Worts.

THE Curious Botaniſts reckon about twenty Sorts of *Star-worts*; and I think I have ſeen the Figures of about 15 different Kinds of them. Their ſeveral Names and Deſcriptions would be tedious to my Reader: And ſince they are all propagated after the ſame manner, the mentioning only of two Sorts, which I eſteem to be preferable to the reſt, may ſuffice for the Inſtruction of any Planter.

That Sort which is the talleſt of the two, which I ſhall recommend, is known to the Gardeners by the Name of the *October-Flower*: It bears its *purple* Flowers about *October*, upon *Stalks* of about four Foot from the Ground, and is not inferior in its Beauty to any Flower in the Spring. I cannot forbear taking notice in this place, that the Flowers of the Autumn Seaſon are inclining to the darker Degrees of Colour; this and other *Aſters*, which blow late, produce *purple Bloſſoms*; the *Saffron-Crocus* has purple Flowers, and the Autumn *Cyclamen* is tending to that Colour; *Stock-July-Flowers*, which bloſſom about the End of the Year, are all inclining to Purple; and the *Colchiums* likewiſe, which are Autumn-blowing Flowers, are ſtain'd with the ſame Colour. I think it would be well worth the Enquiry of the Curious, whether this Purple, which reigns in the Autumn among Flowers, does not proceed from the Quality of the Earth at that Time, whoſe pureſt Juices are then exhauſted. But, to return to the Culture of this *Aſter* or *October-Flower*: It is ſo apt to increaſe in its Roots, that without it be confined in Pots, either as I have directed for the foregoing *Plants*, or as a moſt Curious and Learned Gentleman in the Art of Gardening, *Samuel Reynardſon* Eſq; of *Hillingdon*, has been uſed to plant it (in Pots without Bottoms) it will quickly over-run the Ground; every *Slip* taken from the Root in *March* will grow in any Soil or Expoſure, and make a good Shew that Year. It is a fit Companion for the talleſt Flowers.

The *Italian Star-wort* is the other Sort which I would recommend to the Gardener; it produces its Purple Flowers in *Auguſt* and *September* upon Stalks of about two Foot high, this may be managed like the former; but as it is of a lower Stature, ſhould be planted in leſſer Gardens, and ſmaller Works than the other.

## SECT. IV.

### *Of the Everlaſting* PEA.

THIS *Plant* is likewiſe durable, and may very well be placed among the talleſt *Plants*; it is raiſed from Seeds ſown in *March*, but does not Bloſſom till the ſecond Year after ſowing. The *Flowers*, which are of a *Peach-bloom* Colour continue Blowing for above two Months. Doctor *Grew* tells us, that the Bloſſoms of this *Plant*, if they are ſteeped ſome time in Spirits of Wine, will produce a fine liquid *Blue* Colour, equal to that of *Ultra Marine*. The *Plant* will hardly bear tranſplanting, without great Care to put it immediately in the Earth; the proper Seaſon for it is *March*, or as ſoon as the *Haulm* is wither'd. As it is *Carrot-Rooted* it delights in ſandy Soil, and ſhould be planted either near a Tree or ſome Hedge where it may have Support; it will grow about eight Foot high, if it be tied to a Stake.

SECT.

## SECT. V.

## *Of the* Campanula Pyramidalis, *and* Canterbury Bells.

OF the *Campanula Pyramidalis* there are two Sorts, one bearing *Blue*, the other *White* Flowers, upon Stalks which are ſometimes near ſix Foot high. Both theſe kinds have been chiefly cultivated in Pots for the adorning of Chimneys, in the Summer Months, but they will grow very well in the natural Ground, if the Slips about the Roots are parted in *March*. They delight in Sandy Soil, and are very proper Ornaments for the middle Row of Flowers in large Borders; they bloſſom in *July* and *Auguſt*.

The *Canterbury-Bells* have Bloſſoms of a deeper Blue than thoſe of the *Campanula Pyramidalis*; the Flower-Stems are commonly about three Foot high, ſo that this *Plant* is proper for the middle of Borders in large Gardens; it is raiſed from Seeds ſown in *March*, but does not bloſſom till the ſecond Year after ſowing; the time of removing the Seedling *Plants* is either in *Auguſt*, or the *March* after they are come up.

## SECT. VI.

## *Of the* PRIMROSE-TREE.

THE *Primroſe-Tree*, ſo call'd by the Gardeners becauſe the Bloſſoms are ſomewhat like thoſe of the common *Primroſe* in Smell, Shape, and Colour, the Flower-Stems will ſometimes riſe near three Foot high, and produces Flowers in *June*; the Seed is ripe about *Auguſt*, and muſt be ſown in the natural Ground in *March*, towards the latter end of the Month. The Seedling *Plants* will not bloſſom till the ſecond Year, therefore ſhould be ſown in a Nurſery, and the young *Plants* removed to proper Places the *Auguſt* after they are come up. This *Plant* alſo is proper for the middle of Borders in large Gardens, and will grow in any Soil.

## SECT. VII.

## *Of the* LILLIES and MARTAGONS.

ALtho' the *Lilly* and *Martagon* are properly bulbous rooted *Plants*, yet for their Extraordinary Stature above all other Bulbs that I know, I ſhall place 'em among the Giants of this Chapter, and beſides, as their Roots flouriſh the better for remaining conſtantly in the Ground, I think they may well enough take Place among the *Plants* I am now deſcribing. The *Lillies* are what I ſhall firſt examine, of which there are many kinds, *viz.* the *Common White Lilly*, the *Double Bloſſom'd White Lilly*, the *Striped Lilly*, the *Orange Lilly*, the *Flemming Lilly*, the *Roman Lilly*, and eſpecially a new ſort which Mr. *Fairchild* has lately receiv'd from Abroad, whoſe Flowers are elegantly ſtriped with Scarlet and White. Theſe *Lillies* are all of them propagated after the ſame manner, by parting their *Roots* when the *Leaves* are vacant about *July* or in *Auguſt*; they all of them blow about the ſame time, in *May* and *June*, upon Flower-ſtems of three Foot high, or thereabouts, and equally delight in open *Sandy Soil*; they are very proper *Plants* for the middle of Borders in great Gardens, or to be planted under Hedges in long Walks, except the *ſtriped White Lilly*, which is yet Rarity enough to deſerve a Place in the niceſt, and even the ſmalleſt Garden: But of theſe ſeparately.

Firſt, The *White Lillies*, whether with ſingle, or double Flowers, have no other difference than in the make of their Bloſſoms; that with *ſingle Flowers* is in my Opinion, preferable to the other, which is call'd the *Double Bloſſom*; the *Firſt* has large perfect *Flowers* in good Quantities, and the *other*, miſ-ſhapen *Bloſſoms* without any other Deſert than their Novelty. What is call'd the *Striped White Lilly*, differs only from the Common Sort with ſingle Bloſſoms, in having its *Leaves* curiouſly *edged* with a *Cream-colour*: It is ſo beautiful in the Winter, that few of the gayeſt *Plants* exceed it.

The *Orange-Lilly*, ſo call'd from the Colour of its Flowers, is very ornamental in Gardens, and a very proper Companion for the *White Lilly*, and makes an agreeable Mixture with it; and the other, which bears its *Bulbs* on the Flower-ſtalks, is very deſirable for its beautiful red Flowers, as well as for its ſingular way of producing its Increaſe. It would be well worth our Enquiry, from whence thoſe *Bulbs* have their riſe, whether, they do not proceed from *Female Bloſſoms* impregnated by the *Farina* of the *Flowers*: I own it is a Caſe which I have not yet duly conſider'd; but I hope I ſhall be able to give a better Account of it, when I have examin'd it more ſtrictly: And I could wiſh every curious Reader would communicate his Obſervations upon Caſes of this Kind, directed for me at Mr. *Pemberton*'s the Publiſher of theſe Papers; that by a mutual Correſpondence of Curious Men, many Myſteries in Planting might perhaps be diſcover'd and brought to light for the Profit and Pleaſure of Mankind, which is the chief End I aim at in theſe Papers.

The *Martagons*, called by ſome Gardeners *Turks Turbants*, or *Curl'd Lillies*, differ from the *Lillies* I have already mentioned in the Frame and Order of their *Flowers*; the *Bloſſoms* of the *Martagons* hang downward, and have their *Petals* or *Flower-leaves* curl'd or turn'd up, which the *Lillies* have not; but the *Roots*, *Flower-ſtems*, and *Leaves*, are not unlike thoſe of the *Lilly*; and, in reſpect to their Culture, are ordered in the ſame manner, and love a light, ſandy Soil. They moſt of them blow about two Foot high, except the *Virginian Martagon*, which is commonly three Foot in its Flower-ſtem; their *Flowers* are of ſeveral Colours, ſome *yellow*, others *ſcarlet*, and are variouſly ſpotted; but the *Virginian* Kind far exceeds all others for its beautiful *Flowers*, and is found but in few Places. They are all of them proper for *Parterres*.

## SECT VIII.

### *Of the* FOX-GLOVE.

THE curious Gardeners cultivate three Sorts of *Fox-Gloves*; the firſt or talleſt Sort they call *Iron-colour'd Fox-Glove*; the other two are diſtinguiſhed likewiſe by the Colours of their *Flowers*, viz. the *Purple* and the *White*: They are all of them rais'd from *Seed* ſown in *March*, but do not bloſſom till the ſecond Year after ſowing; the *Flowers* commonly appear in *May* or *June*. The firſt blows about four or five Foot high, the other two about three Foot. Theſe *Plants* delight in the Shade, and thrive well in a loamy *Soil*.

## SECT. IX.

## *Of* Mulleins *and* Moth-Mulleins.

THESE Kinds of *Plants* are very rampant, and therefore very proper Companions for the others of this Chapter; few of them *bloſſoming* lower than four Foot, but ſome ſix Foot high: They are all raiſed from *Seeds* ſown in *Autumn*, or if Conveniency will not permit at that time, *March* will ſerve. They delight in a ſandy Soil and ſhady Places; and altho' they are moſt of them wild *Plants*, yet the beautiful *Spikes* or *Flowers* which they produce in the Summer, renders them worthy our Regard. There are many Kinds of them bearing *Flowers* of different Colours, ſome *White*, others *Yellow*, *Red*, *Brown*, *Purple*, *Black* and *Green*: So that I ſee no reaſon why they ſhould not be cultivated among other tall *Plants* in large Gardens. They bloſſom the ſecond Year after Sowing.

## SECT. X.

## *Of the ACANTHUS.*

THIS *Plant* is very rarely found in the Gardens about *London*; and I do not remember to have ſeen it in above four Gardens in *England*, notwithſtanding its Curioſity and eaſy Culture. The *Flowers* appear in *June* upon Stalks of above two Foot high, they are ſhaped like the *Bloſſoms* of the *Fox-Glove*, and are of a *Peach-bloom* Colour: The *Leaves* of the *Plant* are alſo not without their Beauties; full of Thorns as any *Thiſtle*, and prettily variegated. The *Seeds* muſt be ſown in *March*, but will not *bloſſom* until the ſecond or third Year. They love a ſandy Soil and Shade.

## SECT. XI.

## *Of the* WHITE HELLEBORE.

THERE are two Kinds of the *White Hellebore*, one with *reddiſh-black Flowers*, and the other with *greeniſh Flowers*; the firſt bloſſoms in *May*, and the other the following Month. The *Leaves*, *Roots* and *Stature* of both Kinds are much alike, both having curl'd, plated *Leaves*, and *bloſſoming* about four Foot high. The Leaves are of themſelves a pretty Ornament, and the large Spikes of their *Flowers* are ſurprizingly beautiful for their odd Colours; they both die to the *Root* in *Winter*, and are propagated from Off-ſets parted in *March*, and planted in a rich, light *Soil*. Theſe *Plants* are proper for large Gardens; and with them I ſhall conclude this Chapter, and proceed to treat of ſuch *Flowers* as are leſs rampant, and take up leſs room in Gardens.

## CHAP. V.

## *Of the Middle-ſiz'd* Perennial Flowers.

IN this Chapter I ſhall mention ſuch *Perennial Flowers* as are of middle ſtature, and leſs rampant than the former, and conſequently are proper Inhabitants for ſmaller Gardens. The firſt I ſhall treat of is the *Valerian*, and its Kinds.

SECT.

## SECT. I.

### *Of the VALERIAN.*

THERE are three *Plants* known to the Gardeners by the Name of *Valerian*, and diſtinguiſhed from one another as follows, *Dodineus*'s or *Red Valerian*, *Garden* or *White Valerian*, and the *Greek Valerian*; all theſe *bloſſom* about the ſame time of the Year, in *May* and *June*, and may be raiſed from *Seed* ſown in *March*. The firſt, *i. e.* the *Red Valerian*, is of leſs duration than the other two; it *bloſſoms* about two Foot high, bearing great quantities of ſmall *red Flowers*. I have not try'd whether it be increas'd by parting the *Roots*, but have propagated many *Plants* of the other Kinds that way in *March*. The *Garden Valerian* bloſſoms about the height of the former, bearing Tufts of *white Flowers*, and has this Quality, which is found in the firſt, that the *Root*, when it is broken, yields an agreeable Odour. The third Sort, or *Greek Valerian* bloſſoms about a Foot high, bearing *pale blue Flowers* in Bunches on the top of its Flowerſtems. This is a Fibrous-rooted *Plant*, very eaſily increaſed by Slips. I have ſeen this Sort with variegated *Leaves* common enough in ſeveral Gardens.

## SECT. II.

### *Of the Perennial CYANUS, or* Blue-Bottle.

THIS *Plant* is either raiſed from *Seeds*, or propagated from *Slips* taken from the *Root* in *March*. The *Flowers* are valuable chiefly for their fair blue Colour, which is the moſt rare of any other in the Flowers of *Plants*; the Flower-ſtalks are commonly about two Foot high, bloſſoming in *May* and *June*, and frequently in *Autumn*. This *Plant* loves a light, natural *Soil*, and an open Expoſure.

## SECT. III.

### *Of the MONKS-HOOD, or Blue* Helmet-Flower.

THIS *Flower* is very common in the Gardens remote from *London*, but in thoſe near the City it is rarely found. The *Flowers* are of a deep *Blue*, and of a ſurprizing Make. They appear upon Stalks of about two Foot high, in *May* and *June*, and are ſo poiſonous, that I have heard, the Eating only ſix or ſeven of the *Bloſſoms* in a Sallet, has kill'd a Gentleman in *France*, who was not appriſed of their evil Quality. It is ſaid, that where they grow wild, no Cattle will touch them; and that the Sort of Inſect natural to this *Plant*, is an Antidote againſt the Biting of all venomous Creatures. We may propagate this *Flower* by parting the *Roots* in *March*. It delights in a loamy Soil, and Shade.

## SECT. IV.

### *Of the ROSE-CAMPION.*

THERE are three Sorts of *Roſe-Campion* cultivated in our Gardens, the *Red* and *White Flowering-kinds*, and the *Red Double-Bloſſom*: They all of them blow about a Foot and a half high in

*June* and *July*. The firſt two Sorts are raiſed from *Seeds* ſown in *March*, or from *Slips* taken from the *Root* at that time: And the Double-Bloſſom-kind, which produces no *Seed*, is only propagated by *Slips* in the ſame Month. This laſt is a deſirable *Plant* for the extraordinary Colour of its Flowers, which is the moſt dazling Red I have ever ſeen. A loamy Soil, and open Expoſure, are the moſt proper for them.

## SECT. V.

### *Of the Double-Flower'd ROCKET.*

THE Gardeners know two Sorts of *Double Rockets*, the *White Flowering-ſort*, and that with the *Fleſh-colour Flowers*: They both blow in *May* upon Stalks of about a Foot and a half high; the *White Flowering-kind* is more eſteemed than the other, and more commonly found in Gardens. Theſe are propagated from *Slips* taken from about the *Root*, and planted in *March* in a loamy Soil; they delight in an open Expoſure.

## SECT. VI.

### *Of the BATCHELORS BUTTONS.*

THE Flower called by the Gardeners the *Batchelors Buttons*, is of two Kinds: I mean only ſuch as are cultivated in Gardens; for there are other Sorts of them which grow wild, and bear only ragged ſingle Flowers, and are not thought worthy our Care. Theſe double Flowering-kinds are only different from each other in the Colour of their Flower; the one Red, and the other White:

The Firſt is common enough in moſt Gardens, but the White is more rarely found. They produce their Bloſſoms in *June* and *July*, upon Stalks two Foot high. Theſe *Plants* love Shade and a loamy Soil, and are propagated by parting the *Roots* in *March*.

## SECT. VII.

### *Of the SCARLET LYCHNIS.*

THE *Scarlet Lychnis* is a *Plant* ſo beautiful, that it cannot well be wanting in our Gardens; the ſingle Flowering-ſort, as well as the Double-kind, they are both very delightful to the Eye: They bear their *Truſſes* of *ſcarlet Flowers* upon Stalks ſomewhat more than two Foot high, in *June* and *July*, and are ſo much eſteem'd, eſpecially the Double-ſort, that Gardeners uſually cultivate them in Pots for the niceſt Quarters of their Gardens, or to ſet in Chimneys in the Summer: This Double-kind is increaſed by ſlipping the *Root* in *March*, and that with the ſingle Flower may be propagated after the ſame manner, or raiſed in that Month from *Seeds*, which I think bloſſom the firſt Year. They love an open Expoſure, and a light, natural Soil.

## SECT. VIII.

### *Of the SWEET WILLIAM.*

OF this *Plant* there are two Sorts with ſingle Flowers, and a Double-kind, commonly cultivated in Gardens; the Single-ones differ only in the Colour of their Flowers; the one has *Truſſes* of Bloſſoms variegated with Red and White, and the other Cluſters of Flowers of a deep Crimſon Colour. Theſe two bear their Bloſſoms in *June* and *July*, upon Stalks of two Foot high; and the *double Flowering* Kind produces its beautiful red Flowers in the ſame Months upon ſhorter Stems. The firſt two Kinds, *viz.* thoſe with the *ſingle* Flowers, may be raiſed from Seeds ſown in *March*, and will bloſſom the ſecond Year; but the *double Sort* is only propagated from Slips taken near the Root about *March* or *April*, and planted in a loamy Earth, which they delight in. The others may be alſo increaſed after the ſame Manner, or may be laid down in the Earth like *Carnation Layers*.

## SECT. IX.

### *Of the CARNATION or JULY-FLOWER, vulg. GILLY-FLOWER, and PINKS, their ſeveral Kinds.*

THIS admirable *Flower* is, of all others, the moſt delightful, as well for the agreeable Scent, as for its beautiful Colours: The Varieties of it are hardly to be number'd, every Year producing new Sorts of it from *Seeds*. The Gardeners divide it into five Claſſes, which they diſtinguiſh by the Names of *Pickatees*, *painted Ladies*, *Bizarrs*, *Flakes* and *Flames*. The Flowers of the *Pickatees* are always of a white Ground, ſpotted or pounced (as they call it) with *Red* or *Purple*. The *Painted Ladies* have their *Petals* tinged on the upper Side, either with *Red* or *Purple*, and the under Side of their Flower-Leaves is plain *White*. The Flowers of the *Bizarrs* are ſtriped or variegated with four diſtinct Colours. The *Flakes* are of two Colours only, and thoſe always ſtriped; and the *Flames* have a red Ground always ſtriped with

Black, or very dark Colours. Each of theſe *Tribes* is very numerous; but the *Pickatees* chiefly, of which I have ſeen above one Hundred different Sorts in one Garden, every one diſtinguiſh'd by the *Name* or *Title* of ſome Perſon of *Note* or *Quality*. The *Floriſts* likewiſe mark the Properties of theſe Flowers, by the Shape of their *Flower-Pods*; that Race of them which blow without burſting, are called *long-podded* Flowers; and the other, whoſe *Petals* cannot contain themſelves within the Bounds of the *Calyx*, are called *round-podded* Flowers. I have meaſur'd the *Bloſſoms* of ſome of the laſt Kinds above four Inches over, but have heard of ſome that were larger. Theſe Flowers are not of any certain Height; ſome of them Blowing near four Foot, and others not two Foot high; and the Times of their Flowering is alſo as uncertain as their Stature, ſome of them beginning their Bloſſoms in *June*, and others not till near *Auguſt*; but this happens from the different Seaſon of Sowing the Seed; thoſe which are put into the Ground about *March*, will blow ſooner than thoſe ſown in *May*; altho' they do not bloſſom till the ſecond Year; however, the Height of their *Bloom* is about the Middle of *June*, and it is then the *Floriſts* have their Grand Aſſembly, to ſhew their Varieties, and name their new Curioſities. Theſe *Flowers* are propagated either from *Seeds* or *Layers*; and as they are ſo particularly admired by all Lovers of a Garden, I ſhall be the more exact in the Method of their Culture. Firſt then, to begin with their *Seeds* and Manner of ſowing them, my Reader may remember, that in the ſecond Chapter of my Firſt Part, concerning the *Generation of Plants*, I have endeavour'd to explain, how the *Duſt* of one Flower will impregnate and enliven the *Seeds* of another; and that from that accidental Coupling, the Seeds are ſo changed, as to produce Plants with Bloſſoms varying from thoſe of the Mother-Plant. I have likewiſe ſhewn why double Flowers ſeldom bear *Seed*, which I conjecture is, becauſe the *Male Parts* in them are either not perfect, or elſe are confined from Action by the Multiplicity of the *Petals*. This Conſideration leads me to adviſe the curious *Floriſt* to plant of every good Sort of his double *Carnations* in Beds, on a Line in the Middle; and on each ſide of them to ſet at leaſt two Rows of ſingle ones of choice Colours, and among them ſome Plants of *Sweet-William*, and of the *China* and *Indian Pinks*, which have ſuch Varieties of odd Colours in them as I ſhall mention hereafter. The *China Pinks* and the *Sweet-Williams*, bearing ſingle Flowers as well as the ſingle *Carnations*, may have Opportunities of communicating their *Farina* into the Cells of the double ones, and ſet their Seeds, which if they do, we ſhall not only gather a larger Quantity than we could otherwiſe expect, but likewiſe be aſſured of great Varieties from them. If we have good Fortune enough to find the *Seed Veſſels* begin to ſwell, we muſt guard them carefully againſt two Evils, *Earwigs* and *Wet*; the firſt may be deſtroy'd by hanging *Hog*'s Hoofs, the Bowls of Tobacco-Pipes, or *Lobſter*'s Claws on the Tops of the Sticks which ſupport the Flowers, and killing the *Vermin*, which will lodge in them, every Morning. And to preſerve the ſwelling *Fruit* from rotting by too much *Wet*, ſhelter the Flowers with little Baſons or Trenchers, which will likewiſe ſerve to keep off the too great Heat of the Sun, which would hinder their Growth. With this Care you may expect to find the *Seeds* ready to gather towards the latter End of *September*. This Work muſt be done when the Weather is dry, if poſſible, leſt after all our Pains they grow mouldy and decay. Gather the Seeds with the Stalks they grow upon, and let them remain in that State expoſed to the Sun through a Glaſs for a Month or two without opening any of the *Huſks* or *Seed Veſſels* till the Time they are to be ſown, which, according to my Opinion, is beſt done in *April*, in the following Compoſt.

Take two Load of Sandy Loam (as the Gardeners call it) or of my Medium Soil, to which add one Load of well conſumed Melon Earth; ſift theſe well together, and let your Heap lie for a Time to mellow, then ſift it a ſecond Time, either to ſow the Carnation Seeds in, or to plant your *Layers* or *Roots* of them upon. Having fill'd your Pots with this Earth, and ſmooth'd it on the Top, ſprinkle on your *Seeds*, and covering them half an Inch with the ſame Compoſt, preſs it gently with a Board, and let them ſtand expoſed to the Weather; the Seed will be up in about three Weeks, and the young *Plants* big enough to tranſplant in Beds the *July* following: They muſt be ſet about ten Inches diſtant one from another, and ſhaded from the Sun with Mats for about three Weeks, uncovering them every Evening for the Benefit of the refreſhing Dews. The ſecond Year after ſowing, you may expect many Varieties from the ſeedling Plants, and 'tis in this the great Pleaſure of Gardening conſiſts. Whatever Rarities you find in this Nurſery, muſt be *laid* down ſo ſoon as poſſible, by cutting half thro' a *Joint*, and ſplitting the *Internode* upwards, half way to the other *Joint* above it; then muſt the wounded Part be bury'd in the Earth, and faſten'd down with a Hook of Wood, till it ſtrikes Root, and can ſhift for itſelf, which will be in two Months time, if the Earth be light. But as the time of laying down the Layers of the Seedlings is uncertain, in that we cannot know which are deſerving of that Trouble, therefore I ſhall take Notice, that the moſt proper Seaſon for this Work, is in *July*, ſo ſoon as the

*Layers* are big enough for that Operation, that they may get *Roots* betimes to be taken from their Stocks, and tranſplanted early in the Autumn, where they are to remain all Winter. Tho' ſome rather chuſe to leave them on the old Roots till *March*, before they tranſplant them; but that I cannot approve of, becauſe I have experienced, that the Removal of theſe *Flowers* in the Spring often endangers them, and makes them blow late and weak; whereas, on the contrary, if when we take off the *Layers* in Autumn, we then *plant* them either in the Pots or Borders where they are to blow, we are certain of their Bloſſoming ſomewhat earlier, and much ſtronger; and beſides, their *Increaſe* or *Layers* will be in a fit Condition to lay down betimes. However, whether we *plant* out theſe *Flowers* in Autumn or in the Spring, it will be neceſſary to acquaint the Planter, that they ſhould be ſhaded or defended from the Sun for a Fortnight after Planting; and, during the Winter, ſhould always be nigh ſome Place of Shelter in caſe of ſevere Froſts. It remains now for me to ſay ſomething of the *Blowing* of a *Flower*, as it is practiſed by the moſt ingenious *Floriſts:* About *April*, when the Flower-Stems begin to put forth, (or *Spindle*, as the Gardeners term it) we muſt place by each Flower a ſtrait Stick of about four Foot long, and tye the *Spindles* to it as they ſhoot. So ſoon as the *Flower-Buds* appear, leave only one of the largeſt upon each *Flower-Stem* to *bloſſom*; about ten Days before the *Flowers* open themſelves, the *round-podded* Kinds will begin to crack their Huſks on one Side, then muſt the careful Gardener, with a fine Needle, ſplit or open the Huſk on the oppoſite Side to the natural Fraction, and about three or four Days before the complete Opening of the Flower, muſt cut off, with a Pair of ſharp Sciſſars, the Points on the Top of the

Flower Pod, and ſupply the Vacancies or the Openings on each Side of the Huſk, with two ſmall Pieces of Velum or Oil-Cloth, which we may eaſily ſlip in between the *Flower-Leaves* and the Inſide of the Huſk, ſo will the *Bloſſom* diſplay its Parts equally on all Sides, and be of a regular Figure: But beſides this Care, it is a common Practice, and with very good Reaſon, when the *Bloſſom* begins to ſhew its Colours, to ſhade it from the extreme Heat of the Sun, either with a Trencher-like Board, or ſome other Device of the like Nature, faſten'd to the Stick that ſupports it; *for Flowers as well as Fruits, grow larger in the Shade, and ripen and decay ſooneſt in the Sun.* Thus I have done my beſt Endeavours to inform the curious Gardener of the moſt proper Method for increaſing and improving of this Flower; but am obliged, before I conclude this Section, to mention the ſeveral Sorts of *Pinks* proper for Gardens, which are of the ſame Family with the *Carnation.*

The *Pinks* moſt commonly cultivated in Gardens, are the *Red Double Pink*, the *White Double Pink*, the *Double Pheaſant-Eye-Pink*, the *Dwarf Double Mountain Pink*, and the *China Pink*, beſides the common ſingle Ones raiſed from Seed ſown in *Drills* or *Lines* about *March*. The firſt three of theſe blow about a Foot and a half high; and although they have been frequently uſed for Edgings in Gardens, yet I ſhall take the Freedom to direct them rather for the Inſide of Borders, where they ſhould be planted in Spots; they are too apt to grow irregular in Edgings. The *Dwarf Mountain Pink* indeed, as it is a ſlow Grower, and is ſeldom above eight Inches high, may well enough be placed on the Outſides of Garden-Beds; but that Sort is now rarely found. Theſe four Kinds of *Pinks* are all raiſed from *Slips* planted in *Auguſt*, or very early in the *Spring*. The *China Pink* is admirable for its ſtrange variety of odd Colours, and its ſurprizing Variegations in the Middle of its *Flowers*; this Sort is yet a Novelty with us, and to be met with only in ſome curious Gardens: It is raiſed from Seeds ſown in *March*, and (I think) *bloſſoms* the firſt Year about a Foot high, and will reſiſt the Froſts of our Climate, if the Flower-Stems are cut down ſo ſoon as the *Bloſſom* is over.

## SECT. X.

## Of the *WALL-FLOWER*.

I Have ſeen five Sorts of *Wall-Flowers* cultivated by the Gardeners, which are very well deſerving Place among the moſt delightful Flowers, for their pleaſant Odour and laſting Bloſſoms; the moſt common Sort of them is that with the *Double Yellow Flower*; and the more rare Kinds are the *Double Yellow Flower*, with variegated *Leaves*; the *Double White*, the *Bloody Wall-Flower*, whoſe Flowers are Yellow tinged with Red, and a new Sort with *large ſingle Flowers* variegated with *Yellow* and *Brown*; all which bloſſom about the ſame Seaſon of the Year, and about two Foot high from the Ground, and may be raiſed from *Slips* planted in ſhady Places, either in *March*, *April*, *May*, or *June*: But the laſt Sort may be more eaſily propagated from *Seeds* ſown in *March*. The *Seed-Veſſels* of this and other ſingle Kinds of it, as well as their Flowers, are ſo like thoſe of the *Stock-July-Flower*, that I am of Opinion they may be made to impregnate each others Seeds, if they were planted nigh enough together; and from ſuch Coupling perhaps might be produced a *Stock-July-Flower* with Yellow Bloſſoms. It is what I deſign to try myſelf, as well as many other Couplings of the like Nature;

ture; and altho' the *Seed* of ſuch a Neutral *Plant* would not be made to grow, the Species may be continued, and increaſe by planting *Slips* or *Cuttings* of it, as is common in the Culture of *Double Stocks*. Theſe *Wall-Flowers* delight in Sandy Soil, or to grow among Rubbiſh.

## SECT. XI.

## *Of STOCK-JULY-FLOWERS, vulg. GILLY-FLOWERS.*

THESE are *Shrubs*, like the former, commonly about two Foot high, ſome Sorts of them bloſſoming almoſt all the Year. The ſingle Kinds of them are all raiſed from *Seeds* ſown in *March*, and will come up and be fit to tranſplant the *Autumn* following, but do rarely blow till the ſecond Year, unleſs they be raiſed in Hot-Beds, or are of the annual Kind, as they call it. Among the *Seedlings* we often find *Plants* with double Flowers, which ſhould be carefully tranſplanted into Pots, for the Ornament of the niceſt Places in the Garden, or to adorn Chimneys in the Summer. The double Kinds may be increaſed by *Slips* or *Cuttings* planted in *May*, *June* or *July*; but it is not worth while to propagate the ſingle Ones after any other manner than from their *Seeds*. There are five Sorts of them, beſides the *Dwarf* Kind, or *Annual Stocks* for Edgings. The *White Flowering Kind*, that with the *Purple Flower*, the ſtriped Sort, the large *Red Brompton Stock*, and that Sort which bloſſoms the firſt Year; of all which the *Brompton* Kind is eſteemed to be the beſt. The Scent of their Flowers is very grateful, and the ſeveral Colours of their Bloſſoms, if they are well mix'd, are extremely beautiful. They love a light natural dry

Soil, and are apt to periſh by too much Wet in the Winter, therefore it is adviſeable to ſow a young Nurſery of them about *Auguſt* to blow early the next Year, if the great *Plants* drop off, as they will do in all ſevere Froſts.

I cannot any where, ſo properly as in this place, take notice of an Obſervation which an ingenious Gentleman has communicated to me concerning the *Seeds* of *Plants*, and particularly thoſe of the *Stock-July-Flower:* He ſays, that he once bought ſome *Stock-Seed* of a Gardener near *London*, which he ſow'd in his Garden in *Oxfordſhire*, and brought him great ſtore of double Flowers, and ſome few ſingle ones of an extraordinary Colour and Bigneſs; which were ſo much admir'd by the Gardeners round about him, that he was continually ſolicited for ſome of their *Seeds*. He ſaved a large Quantity, and ſupply'd ſeveral curious Perſons with it. What he gave away, maintain'd for the firſt time of Sowing, its firſt Excellence; but what he ſowed in his own Garden, loſt its good Qualities. In ſhort, he was now become a Supplicant to thoſe he had ſet up, and from the *Seeds* they had ſaved, he had his firſt good Fortune in many *double Flowers*; while thoſe who had ſaved the *Seeds* complain'd of their ill Luck, and were apt to ſay, that if they had not gather'd them with their own Hands, they ſhould have believed they had been impoſed upon. At laſt they all agreed mutually to exchange the *Seeds* of this and other Flowers annually, and every one had good Succeſs. This Story, I think, plainly ſhews how much the Change of Air and Soil contributes to improve ſome particular *Vegetables*.

## SECT. XII.

## *Of the* French *HONEY-SUCKLE.*

THIS *Plant* bears Spikes of *purple Flowers*, much like thoſe of the *Lupines* in their Figure and manner of Growth: It bloſſoms above a Foot high, and makes an agreeable Shew. It is raiſed from Seeds ſown in *March* or *April*, in the natural Ground, which ſhould be light, and lie expoſed to the Sun. The Seedling *Plants* will not bloſſom till the ſecond Year, and ſometimes not till the third, eſpecially if the Ground be over-moiſt. 'Tis a hardy *Plant*, and will live ſeveral Years.

## SECT. XIII.

## *Of the FLOS-CARDINALIS.*

I Have ſeen and cultivated only two Sorts of the *Cardinal-Flower* in *England*; the one blows almoſt three Foot high, with ſlender Stalks, and moſt beautiful Flowers of a Ruby-colour; the other bloſſoms about two Foot high, and bears pale-blue Flowers: The Seeds of both theſe Kinds are brought from *Carolina*, and I think from *Virginia* likewiſe. They muſt be ſown in hot Beds about *March* in ſifted light Earth; the Seeds are ſo ſmall, that they muſt be but thinly cover'd with Mould, otherwiſe they will not come up; and the ſame Rule muſt be obſerved in the ſowing all manner of Seeds, to cover them with Earth in proportion to their Bigneſs. Theſe *Plants* begin their Bloſſom about the latter end of *July*, and continue Flowering above two Months. They are commonly cultivated in Pots, as well to give them ſome little Shelter in the moſt ſevere Froſts, as to place them in proper Places for Ornament in Houſes; but I am ſatisfy'd they will grow in open Borders, and thrive very well in ſuch Places. In *April*, they may be increas'd by parting their Roots, and ſhould be planted in Places expoſed to the Sun.

## CHAP. VI.

### *Of the Loweſt Kinds of* Perennial *FLOWERS.*

THE *Plants* which I ſhall treat of in this Chapter, are ſuch as are of the ſmalleſt Kinds, and therefore the moſt proper for the Outſides of Borders or Garden-beds, and to be cultivated in ſmall Gardens: The firſt I ſhall make mention of are the *Primroſe*, and *Cowſlip*, which are by Gardeners both included in the Name of *Polyanthos*, tho' without Reaſon; for the *Primroſe* bears only one Flower upon a Stalk, but the *Cowſlip* indeed anſwers to the Name by bearing many Flowers upon a Stem; but Difficulties of this nature I hope to ſet to rights ſome other time in a *Botanical Nomenclator*. In the mean while I ſhall treat the Gardener in his own Language.

## SECT. I.

## Of the POLYANTHOS.

THIS Sort of *Plant* is generally divided by the Gardeners into two Claſſes, *viz.* the *Primroſe* Kind, and the *Cowſlips.* Theſe are again diſtinguiſhed by the Terms of *Single Flowering, Double Flowering, Hoſe in Hoſe, Pentaloons* and *Feathers.* The *Single Flowering* Sorts I need not explain, but take notice only that their Colours are chiefly *White, Yellow, Red, Purple,* and ſometimes *Violet-colour,* and frequently variegated in their *Flowers.* The *Double Kinds* are not above four in number that I know of, the *Double Primroſe,* the *Double-Paper-White-Primroſe,* the *Double-Red-Primroſe,* and *Double Cowſlip*; the Bloſſoms of which are full of *Petals.*

The *Hoſe in Hoſe* Kind has its Bloſſoms one in another, without Caſes. The *Pentaloons* have green Leaves about their Bloſſoms, which are ſometimes variegated with the ſame Colours of the Flowers they encompaſs; and the *Feathers,* which ſeem by nature to be at firſt deſign'd for *Hoſe in Hoſe,* have their *Bloſſoms* ſo ſplit and curl'd, that they ſomewhat reſemble Bunches of Feathers. Of theſe there are many Varieties, which are multiply'd every Year by ſowing their Seeds. The Curious in this way ſow them in *February,* upon a Place prepared with Earth taken out of decay'd Willows, often refreſhing the new-ſown Spot with Water, and keeping it ſhaded from the Sun all *April* and *May,* till the young *Plants* are above Ground. The Seedlings ſo rais'd, will be fit to tranſplant into Beds the *July*, or *Auguſt* after they are ſown: The Soil ſhould be ſomewhat binding, and their Expoſure to the Morning Sun; ſo will they be prepared to bloſſom the *March* and *April* following. Theſe *Plants* may be likewiſe propagated by parting their Roots in *Auguſt*, which is a much better Seaſon for that Work than the *Spring*, altho' it may be done at that time, even when they are in Flower. I have obſerved, that ſuch *Polyanthos* as I have cultivated, began to loſe the Beauty of their Colours, if I let them ſtand two Years without parting, and even then would decline; ſo that I adviſe every one who covets this *Plant* in Perfection, to ſow them every Year, and tranſplant them frequently. The *Primroſe* Kinds of theſe bloſſom cloſe to the Ground, and the *Cowſlips* about ſix Inches high; both Sorts may be planted near the Edges of Borders, and near Houſes, for the ſake of their pretty Smell.

But, to leave the Garden a little, I muſt recommend to my Reader the Planting ſome of the common Sorts that grow in the Woods, in ſome of the moſt *Rural Places* about his Houſe; for I think nothing can be more delightful than to ſee great numbers of theſe Flowers, accompanied with *Violets*, growing under Hedges, Avenues of Trees, and Wilderneſs-works.

## SECT. II.

## *Of the* AURICULA.

THIS Flower, above all others, has been the Pride of the Gardeners, and was ſo much in eſteem ſome few Years ago, that I have known one Root of it ſold for twenty Guineas; but that was indeed when they began firſt to appear in our Climate. The Art of raiſing them was diſcovered, and became familiar, and the fooliſh Vanity of diminiſhing a Fortune for a Sett of Flowers was then laid aſide; and now, the Collections, which were before without Price, may be purchaſed upon reaſonable Terms. The *Flowers* are indeed very delightful, as well for their ſurprizing Varieties, as the Fragrancy of their Smell. They bloſſom in *April*, and are in the height of their Bloom about the Twentieth of that Month: They blow commonly about ſix Inches high. The numerous Varieties of theſe Flowers are all diſtinguiſh'd by the Names and Titles of Great Men; and I have often thought of a pleaſant Expreſſion of a Friend of mine concerning theſe Flowers, and their extravagant Prices, *That the* Auricula's *increaſed ſo faſt, and the Great and Wiſe Men decreaſed ſo faſt, that in a ſhort time this Tribe of Plants would want Men of Note to take their Names from.* But if it is poſſible for us to admire the Beauties of this *Flower*, when we may raiſe them with a little Trouble, and a moderate Expence, my Reader may ſupply himſelf with them by following the Directions I ſhall here lay down for their Culture; and that he may be a right Judge of what are good among them when they come to blow, I ſhall preſent him with a Table of their ſeveral good Qualities required by the ſkilful Floriſts. A good *Auricula* ought to have the following Excellencies: *Firſt*, That the *Flower-ſtem* be ſtrong and ſubſtantial: *Secondly*, The *Foot-ſtalks* of the *Flowers* muſt be ſhort, and capable of ſupporting the *Bloſſoms* upright: *Thirdly*, That the *Pipe* or *Neck* of each *Flower* be ſhort: *Fourthly*, That the *Flowers* be large, and of a regular Form: *Fifthly*, Their *Colours* ſhould be bright, and well mix'd: *Sixthly*, That the *Eye* be *large*, *round*, and of a good *White*: *Seventhly*, That the *Flowers* ſpread themſelves flat, and be no ways inclinable to *Cup*: And, *Laſtly*, That there be a good *Truſs* of *Flowers* equally ſpread upon the *Stalk*.

With theſe Perfections we may account an *Auricula* to be good, and from ſuch only we ought to ſave Seeds for ſowing, and propagating others, if we hope for Succeſs; and as a Help to our Deſign, let us conſult the Chapter relating to the Generation of *Plants*, and improve the Variety, by placing ſuch *Flowers* as are of the moſt different Colours together whilſt they are in Bloſſom; that ſo the *Seed-veſſels* of the one may receive the *Duſt* of the other, and by that means give us an agreeable Mixture of Colours in thoſe *Plants* we raiſe from Seed; and it would be well worth our Enquiry, whether the *Seeds* thus impregnated, partake more of the Shape, or of the Colours of the *Flowers* of the Mother *Plant*; to be certain of which, the *Plant* you make trial of muſt be caſtrated of its *Apices*, before they are ripe or burſt open.

The *Seeds* of this *Flower* ſhould be gather'd as ſoon as the *Flower-ſtem* is yellow, and the *Seed-veſſels* come to their full Growth. In the ſaving and preſerving of theſe *Seeds*, as well as all others, I would adviſe that the whole *Truſs* or *Bunch* of *Seed-veſſels* be gather'd with the *Flower-ſtem*, and remain upon it till the Time of Sowing; for certainly nothing contributes more to the Strength and Vigour of *Plants* to be raiſed from *Seeds*, than a right Method of preſerving ſuch *Seeds* till the Time of Sowing; and what can better inſtruct us in that Method than Nature itſelf? Here, I ſuppoſe, ſome People will find fault with my Advice, and be apt to ſay, that if the *Stems* of *Auricula's*, with their *Seed-veſſels*, had remain'd upon the

*Plant*, the Seeds would have fallen to the Ground as ſoon as they had been ripe; and where is then my Argument, that Nature would keep them caſed up all the Winter, as I propoſe to do from her Example?

To theſe I anſwer, that the Seeds of *Vegetables* are like the Eggs of *Fowls*, which, after they are perfected in the *Matrices* of either, will only keep good a certain time before they ought to be ſet, or put into a proper Poſture for Hatching; the Seeds which fall to the Ground are nouriſhed by the Earth they fall upon, till the proper Ferment begins for their *Vegetation*. And if they are kept in their Cells till a proper Seaſon for Sowing, it is very reaſonable to believe they will find here a natural Nouriſhment, ſince it is known that they were perfected from the ſame *Juices* in the ſame *Cells*, and that were they to lie dry in a Chamber for ſix Months, without either Earth or their own natural Nouriſhment to feed from, they muſt certainly loſe their Strength, altho' perhaps they may not entirely decay. But, to proceed: The Seeds of the *Auricula* ſhould be gather'd in a dry Morning, as I have directed, and laid upon Sheets of Paper in ſuch Places where three Hours Sun may paſs over them every Day for near a Month, till they are out of danger of growing mouldy, then may they be laid by in a dry Place till the Firſt of *February*; at which time the Seeds may be cleans'd out, and ſown in the following manner:

Prepare a Box of *Oak* or *Deal* four Foot long, two Foot wide, and ſix Inches deep, with Holes in the bottom ſix Inches diſtant from one another. In this Box lay two Inches thick of *Cinders* of *Sea-coal*, and over them ſpread ſome fine, ſandy Loam the Depth of three Inches, over which ſift ſome Earth taken out of hollow *Willow-trees*, till the Box is full; and then ſow the Seeds on the top without any Covering of Earth, only preſſing them into the

*Mould* with a Piece of flat Board, to ſettle them below the Edges of the Box, that in watering, the light Seeds may not float over the Brims; this Seminary muſt be continually refreſhed with Water, ſo that it never be dry, for without a conſtant Moiſture the Seeds will never come up. It is neceſſary to cover the whole with a Net, to prevent the Birds from deſtroying the Seed; and likewiſe to acquaint the Gardener, that from the time of Sowing to the beginning of *April* the Box ſhould be ſo placed to receive the Heat of the Sun, but after that time ſhould be removed into ſome ſhady Place, leſt the young Seedling *Plants* be ſcorch'd and wither'd away. But if it ſhould ſo happen, thro' the Neglect of watering, that the Seeds do not come up the firſt Year, let the *Caſe* be preſerved till the Year following, and there will certainly be a good Crop, as I have often experienced.

The Seedlings will be ſtrong enough to tranſplant the *July* or *Auguſt* after they appear above Ground; they ſhould then be planted about four Inches diſtant from one another, in Beds of light Earth well ſifted, where, if poſſible, they may only enjoy the Morning Sun, and it will be neceſſary to ſhade them even from that Warmth for a Fortnight after Planting. The *April* afterwards you may expect ſome of them will begin to ſhew themſelves, and then as they anſwer the good Qualities I have mention'd, tranſplant them into Pots fill'd with any one of the following *Soils*.

*Firſt*, To half a Load of Sea Sand, add one Load of Loamy Soil, and one Load of Melon Earth; let all theſe be well mix'd and ſifted together.

*Second Earth*, Take one Load of Sandy Loam, to which add the like Quantity of Melon Earth; mix and ſift them together.

*Third Earth*, Take of rotted Wood, or the Bottom of a Wood Pile, one Load, to which add the ſame Quantity of Loam, and half a Load of Melon Earth prepared as the other Earths.

I have already hinted in the firſt Part, but I ſhall once more take Notice, that all mix'd Soils or Compoſt ſhould lie ſome time, for the ſeveral Parts to incorporate with one another before they are uſed. The three Sorts I have here ſet down have been made uſe of by ſeveral Gardeners with Succeſs. I ſhall not pretend to ſay which is the beſt; for I have ſeen *Auriculas* blow well in each of them, therefore ſhall leave my Reader to pleaſe himſelf. I think there remains little more for me to ſay concerning this *Flower*, than to take Notice of the Method commonly uſed in the blowing them, which is thus. Set your Pots upon Shelves, one above another, in ſuch a Part of the Garden where the Morning Sun may only come at them; and as theſe *Flowers* are commonly cover'd with a ſort of *Duſt* which contributes in great Meaſure to make them beautiful, ſome Covering muſt be provided for their Shelter againſt Rains, which are apt to waſh it away, and deſtroy their Colours. The Seaſons for parting their *Roots* are either when they are in *Flower* or about St. *James*'s Tide, but the latter is judg'd to be the beſt. And now I ſhall conclude this Section of the *Auriculas* with a Word or two of Advice to the curious Floriſt, that he obſerves to keep them from much Wet in the Winter, often taking away their rotted *Leaves*, and that he does not let the firſt Week in *January* paſs (if the Weather will permit) without taking the decay'd Earth from about the Roots of his *Flowers*, and filling up the Pots with freſh, from his Heap of prepared Soil. By which Means his *Plants* will be ſtrong againſt their Flowering Seaſon.

## SECT. III.

## *Of the* BLACK HELLEBORE, *or* Chriſtmas-Flower.

OF theſe *Plants* there are reckon'd three Sorts among the Gardeners, which are all *Dwarfs*, and very proper for ſmall Gardens, ſeldom bloſſoming above half a Foot from the Ground; the moſt forward Blower of them is the *Black Hellebore* with the *White Flower*, which begins to bloſſom about *Chriſtmas*, and continues till *February*; the ſecond Sort is that with a *Green Flower* bloſſoming about the ſame time; and the third Sort has a ſmall cut Leaf almoſt like *Fennel*, and bears a *Yellow Flower* in *May*; all theſe are propagated by parting the Roots in *September*, and delight in a ſandy Soil and Shade. I have indeed taken off their off-ſets, and planted them when they were in Flower; but *Autumn* is much better. As yet I have not ſeen any ripe Seeds of theſe *Plants*; but I ſuppoſe it was for want of examining them at due Seaſon; if they bear any, as I am pretty well aſſured they do, the proper Seaſon of ſowing them is as ſoon as they are ripe. Every one of theſe Sorts are ſo rare, that they are hardly to be met with, unleſs at Mr. *Fairchild*'s at *Hoxton*.

## SECT. IV.

## *Of the* GENTIANELLA.

THIS *Plant* is one of the loweſt Race; I have ſeen but one Sort cultivated in our *Engliſh* Gardens, altho' there are many Varieties of it frequently

## SECT. VIII.

## *Of the* THRIFT, *or* SEA-GILLY-FLOWER.

I Have had three Sorts of *Thrift*, the *Common*, the *Scarlet Flowering* Sort, and that with the *White Flower.* Theſe are only proper for Edgings of large Borders in long Walks, or the moſt rude Parts of Gardens; they bloſſom in *May* and continue a long time in *Flower.* We may propagate them from *Slips* in *Auguſt* or *March*, they love a ſtrong Soil. *N. B.* The *Sea Pinks* make good Edgings for long Walks, and may be propaged after the ſame manner as the former.

I have now given my Reader an Account of all the *Perennial Plants*, which I think are worthy of our Care in Gardens, and ſhall next proceed to give proper Directions for the Culture of the next Degree of *Hortulan Plants* with *Bulbous Roots.*

## CHAP. VII.

## *Of* Bulbous, *or* Onion *rooted Plants.*

ALTHO' a *Bulb* is properly ſuch a Root as is round and ſucculent, made of many *Tunics* wrapt over each other, like the Root of an *Onion*; yet according to the Gardeners I ſhall comprehend under the Title of *Bulbous Rooted Plants*, the *Anemonies* and *Ranunculas*, tho' their Roots differ from the Shape I have deſcrib'd a *Bulb* to be of. I deſign in this Chapter to ſpeak firſt of thoſe

*Bulbs*, or *dry Roots* (as they are called by ſome) which are commonly taken out of the Ground every Year, as ſoon as their *Stalks* are decay'd.

## SECT. I.

## *Of the TULIP.*

THE *Tulip* wants nothing (in my Opinion) but a grateful Scent to make it the fineſt *Flower* in the World; there are infinite Varieties of it vaſtly different from each other, which diſplay their Beauties, and eclipſe the Glories of all other *Plants* of the *Garden.* Theſe Ornaments of Nature are as kind as they are beautiful, ſome or other of them bloſſoming from *January* to the latter End of *May.* They are divided into two *Claſſes*, *viz.* the *Præcoce Tulips*, or early Blowers, and the *Serotine*, or later Blowers; and theſe may be diſtinguiſh'd by their *double* and *ſingle Flowers.* Again, with reſpect to their Colours and Stature, they have other Denominations, as *Bagetts*, which are the talleſt Blowers, commonly *Purples* and *White marbled*; *Secondly*, *Agates*, which blow ſhorter than the former, whoſe *Flowers* are vein'd with two Colours; and *Thirdly*, *Bizars*, which have four Colours, tending to *Yellows* and *Reds* of ſeveral Sorts. The Varieties of theſe Kinds are ſeverally diſtinguiſh'd by the Names of Cities, or ſuch like Characters. The good Qualities of *Tulips*, which the Gardeners generally approve of, are the Beauties of their *Colours*, the Strength and Height of their *Flower-ſtems*, and that their Flowers be of the Shape of an Egg, without ſharp Points on the Top of their *Petals*, but above all, their Novelty.

I have often wonder'd at the extravagant Price which has been, and even at this Day is, given for theſe Flowers in *Holland* and *Flanders*, when every Year produces ſo many new Varieties; there are indeed the beſt in thoſe Countries that I have ever ſeen; but I believe if we in *England* took the right way for their Management, we might ſoon boaſt of our good Succeſs, and propagate great Numbers of them at a very cheap Rate. For this End, I ſhall ſet down ſome Trials I have already made, and offer ſome reaſonable Conjectures which may yet farther contribute to their Improvement.

The Method of raiſing them from Seeds, is what I ſhall firſt offer to my Reader. The *Flower Stems* being left remaining upon the Roots, will perfect their Seeds about *July*, which will be fit to gather when the *Seed-Veſſels* begin to crack or burſt open. They ſhould then be cut cloſe to the Ground in a dry Day, and laid in ſome dry Place till *September*, which is the moſt proper Seaſon for ſowing them, and the following Spring they will come up, if they are kept under Shelter. The firſt Year their *Roots* will be no bigger than *Wheat Corns*, but after their ſecond Appearance above Ground they may be taken from the *Pot* or *Caſe* they were ſown in, and ſow'd or ſprinkled over a Bed of natural ſandy Soil well ſifted, where the Thickneſs of half an Inch of the ſame Earth ſhould be ſpread over them; thus may they remain without any Culture; then adding half an Inch of Earth for Covering every Year till they begin to blow, which will be in five or ſix Years after ſowing: But let no Man be diſcouraged at the Length of the time they lie in the Ground without Blowing, the *Plant* will anſwer his Expectation; let him ſow every Year, and he will gain new Varieties ſucceſſively, when his firſt Seminary begins to blow. I have known many fine *Tulips* raiſed by this Means, but have once heard of a large Bed of *Seedlings*, which were only of plain Colours without Variegations; but that might happen from the Qualities of thoſe Flowers which the Seeds were ſaved from. But, however, if by chance our young Nurſery ſhould prove all of them plain Flowers, we are not yet without hopes, the Plainneſs of their Colours I ſuppoſe to proceed from a Strength of Nature, as we are ſure the Variegations of all Flowers are the Effects of Weakneſs, and want of Nouriſhment: For whoever has cultivated thoſe Sorts of *Tulips* which are call'd *Breeders*, muſt know they are of plain Colours, and are always large, tall-blowing *Flowers*; 'tis from thoſe *Breeders* are commonly produced the *Flowers* of the greateſt Value for their Stripes ſake; now and then one of them breaking (as they term it) into beautiful Mixtures of Colour or Variegations. This Alteration of *Tulips* is reckon'd by the Gardeners to be the Effect of Chance; but I believe, the two following Obſervations will explain the Myſtery. Near *Bruſſels* a Man is famous for a little Spot of Ground, in which, by ſome ſtrange Virtue (as is reported) theſe *Breeding Tulips* change themſelves into fine, variegated *Flowers*; inſomuch that their *Roots* are brought thither from ſeveral Parts, to be educated and brought up for the niceſt Collections, and Money given for their ſtanding. In that Placę it is rare if three in five do not break into Stripes the firſt Year after they are planted: But this Alteration I think may be accounted for, by examining the Soil; which is nothing but common Rubbiſh ſifted, or at moſt, there is not one twentieth Part of it natural Soil.

It is very plain that a Soil of this nature muſt impoveriſh the *Roots* that are ſet in it, and conſequently the *Flowers* muſt ſome way or other ſhew the Diſtemper of the *Roots* from whence they ſpring. And to continue the Variegations of *Tulips*, they are taken out of the Ground every Year as ſoon as they have done blowing; for if they were always to remain in the Earth, they would in time become plain *Flowers.* But, *Secondly*, the other Obſervation I have made concerning the Striping of theſe *Flowers*, was in a Gentleman's Garden near *London*, who planted a Bed of *Breeding Tulips*, and the following Year, when they came to blow, he found a fine ſtriped *Tulip* at each Corner of the Bed, and none of the others were any ways alter'd: This I ſuppoſe happen'd from four large *Pyramid Yews*, which then grew at ſeveral Corners of the Bed, and had exhauſted the natural Strength of the Soil about them. I ſhall therefore recommend theſe Obſervations to the ſerious Conſideration of every ingenious *Floriſt*. And now, ſuppoſing that by theſe, or any other Means, a Gentleman is ſtock'd with a good Collection of Rarities of this Sort, I ſhall proceed to acquaint him of the proper Method of planting and cultivating them; and, firſt, of the Soil.

In *Holland*, where I have ſeen the fineſt Collections of this Sort of *Flower*, the Soil is naturally ſandy; as near as I can judge, about two Parts in three of Sea-ſand to one of common black Earth: In this Soil only, I have ſeen of the *Baggett* Kind of *Tulips* bloſſom above three Foot high, and the other Sorts in proportion. The Curious in that Country always obſerve two Things in planting their *Tulips:* The *Firſt* is, to plant all the forward Blowers in a Bed together; and when they plant the late Flowering-kinds, they place the talleſt Sorts in the middle Line of the Bed, and on each ſide of them ſet two Rows of the ſhorteſt Blowers. The Seaſon for putting in theſe Roots is always the laſt Week in *Auguſt*, if the Weather be fair. They give them little ſhelter till the Flower-Buds appear; and then they defend them from Blights with Mats, or painted Cloth, ſtrain'd upon Hoops; which Covering ſerves alſo for ſheltering the *Flowers* when they are blown, from Rain and the ſcorching Heat of the Sun, either of which would quickly ſpoil the Bloſſoms. Theſe Roots are always taken out of the Ground as ſoon as their *Flower-ſtems* begin to decay, and being well dry'd, are laid up in Paper till the Planting Seaſon returns.

*N. B.* The beſt *Baggett Breeders* are call'd *Bagget-Primo's*, and are ſold in *Holland* now for five Pounds *per Hundred.* Theſe *Flowers* are increaſed from Off-ſets, which grow about the Roots; and of other *Breeders*, the beſt Sorts are the *Van-Porters*, the *Beau-Regard*, and a *Violet-Breeder*, which I have ſeen break into extraordinary Colours, at Mr. *Whitmill*'s at *Hoxton.*

## SECT. II.

## *Of the* RANUNCULUS.

THE *Ranunculus*, next to the *Tulip*, is deſirable for its beautiful Flowers; there are many Varieties of it brought from *Turky* every Year, ſo that the Names of every Sort now known in *England*, would rather be troubleſome than inſtructive to my Reader. The beſt way will be for him to take a view of the ſeveral curious Collections of them in the Gardens about *London*, when they are in flower: However, that he may be the better appriſed of what I deſign to treat of in this Section, I ſhall deſcribe ſome few Sorts of them. The *Ranunculus* bears its Bloſſom in *April* and *May*, upon Stalks about ſix or eight Inches high: The Double-flowering Kinds are crouded with *Petals*, after the manner of the *Province-Roſe-Flowers*, and ſome of them as large. The Colours of thoſe *Ranunculus*'s I have ſeen, are deep *Scarlets* vein'd with

*Green* and *Gold* Colours, *Yellow* tipp'd with *Red*, *White* ſpotted with *Red*, *Orange* Colour, plain *White*, *Yellow* with *Black*, and one Sort of a *Peach-Bloom* Colour; which yet I have only ſeen at Mr. *Blind*'s at *Barns* in *Surrey*. The Single-kinds blow ſomewhat taller than the others, and are commonly variegated with pleaſant Colours. All theſe are increaſed by Off-ſets found about the Roots when they are taken up, and may likewiſe be propagated from Seeds ſaved from the Single-kinds; but as they will not ripen in *England*, we have hitherto been beholden to the *French* for them. The proper Seaſons for ſowing the Seeds of this *Plant*, is the latter end of *Auguſt*, and the Soil which they moſt delight in, is rotted *Leaves*, or ſuch Soil as may be taken from the Surface of the Earth, in Woods or Groves of long ſtanding.

*Tanner*'s Bark, or the Bottom of a Wood-pile, are likewiſe very proper Earths for theſe *Flowers*, if they are well ſifted and mix'd with one third Part of natural Soil. Theſe *Plants* are ſomewhat tender, and require ſome Shelter in the Winter, eſpecially if they have began to ſpring before the Froſts. The Seedling *Plants* come up the Spring after they are ſown, and bloſſom the ſecond Year; when they are out of Flower, and the *Stalks* and *Leaves* are decay'd, their Roots ſhould be taken out of the Ground, and being well dry'd in the Sun, muſt be preſerved in dry Sand till the latter end of *September*, which is the beſt Time for re-planting them, if the Ground be not over wet.

## SECT. III.

## *Of* ANEMONIES.

OF this Kind of *Plant* there are many Varieties, as well with *ſingle* as with *double Flowers.* Their Colours are chiefly *Reds*, *Blues*, and *Purples*; their Bloſſoms, which are ſeldom above five or ſix Inches from the Ground, open themſelves about *April*; and if the Roots are ſuffered to remain in the Earth, they will again repeat their *Flowers* in *September*, and continue blowing the greateſt Part of the Winter: But it is ſeldom that the Gardeners will leave any of their choice *Anemony* Roots in the Earth after the Spring-bloſſom is over, leſt they decay by too much Wet, which is frequent enough in our Climate, in the Summer Seaſon. The Roots of theſe *Plants* ſhould be taken out of the Ground and preſerved, and replanted like thoſe of the *Ranunculus*, with this Difference only, that *Anemony* Roots ſhould be increaſed by breaking the *Knots* aſunder, which are about the bigneſs of a ſmall Button, and planting them after they have laid two or three Days in the Sun. Theſe *Flowers* love a ſandy Soil without Mixture, chiefly ſuch as is found about *Batterſea* in *Surrey*, where they blow very large. The Seeds of the Single-kinds ripen about the latter end of *May*, and ſhould be carefully gather'd as ſoon as they begin to crack, or ſhew their Down, otherwiſe the leaſt Wind will carry them away. From them we may raiſe innumerable Varieties, if they are ſown in *February*, and lightly cover'd with Earth. They blow the ſecond Year after ſowing.

## SECT. IV.

### *Of the* JONQUIL, NARCISSUS POLYANTHUS, *and others of the ſame Tribe.*

THE *Jonquil* is a *Flower* generally admired for its delightful *Scent*; the Double-kind bloſſoms in *April*, and that with the ſingle Flower ſomewhat ſooner: The *Roots*, which are *bulbous*, like thoſe of the *Tulip*, love a light, ſandy Soil, and an open Expoſure: They ſhould be taken out of the Ground, and re-planted like other *Bulbs*: And in like manner ſhould be order'd the *Narciſſus Polyanthus*, whoſe ſweet-ſcented *Flowers* are not leſs deſirable than *Jonquils*. Theſe, with all other Kinds of the *Narciſſus*, are propagated from *Off-ſets* of their *Roots*. Next to thoſe I have mention'd in this Section, the *Double-white*, and *Double-yellow Narciſſus* are worthy our Eſteem; and even the Common *Daffodil* is to be admir'd for its pretty Ornament in rural Parts of the Garden. All theſe bloſſom in the Spring about a Foot high.

## SECT. V.

### *Of the* HYACINTH.

THERE are many Kinds of *Hyacinth*; ſome with *ſingle Blue Flowers*, and others with *ſingle White Flowers*, and with *double Flowers* of both thoſe Colours: The *Grape Hyacinth* and *Starry Hyacinth* have alſo their Varieties; all which, as well as the *Hyacinth* of *Peru*, will bear the Severity of our Froſts: All of them, except the laſt, blow early in the Spring, and are moſt of them well ſcented. They are increaſed from *Off-ſets* of the *Roots* planted in *September*, in Beds of ſandy Soil; The *Flowering-ſtems* of theſe *Plants*, except the *Hyacinth* of *Peru*, are ſeldom more than half a Foot high from the Ground.

## SECT. VI.

## *Of the* CYCLAMEN, *or* SOW-BREAD.

I HAVE ſeen near thirty Sorts of this *Flower* in the *Amſterdam Gardens*; but in *England*, we have not above four Sorts, *viz.* the *Spring*, *Autumn*, and *Winter-blowing* Kinds, with *Pink-colour'd Flowers*, and the ſweet-ſcented *White-flowering* Kind. The laſt is ſomewhat tender, and rarely found in our Gardens; but the other Sorts, which are hardy enough to ſtand abroad all the Year, are pretty common. Theſe are rather *Turnip-rooted Plants* than *Bulbs*, and are only propagated from *Seeds* ſown as ſoon as they are ripe, which indeed are more like *Roots* than *Seeds*. Theſe *Plants* are beautiful, as well in the Variegation of their *Leaves*, as the delightful Colour of their *Flowers*: They love a light Soil, and can only be tranſplanted with ſafety about *Midſummer*, when their *Leaves* are decay'd; their Bloſſoms ſeldom riſe above four Inches from the Ground.

## SECT. VII.

## *Of the* GUERNSEY-LILLY.

THE *Guernſey-Lilly* has hardly its Equal for Beauty among the Flowering Race, and yet it is rarely found in our Gardens; which may be perhaps for want of a right Knowledge of its Culture. Mr. *Whitmill* of *Hoxton* has this *Plant* flowering with him every *Autumn*, even from *Off-ſets* taken from great *Roots*. The Bloſſoms are large, and not unlike thoſe of the *Lilly* in their Make, ſeemingly powder'd with Gold Duſt upon *Roſe-colour'd Petals*. The moſt proper Soil for this *Plant* is two third Parts of Sea-ſand to one of natural Soil, or a light, ſandy Earth mixed with an equal Quantity of Rubbiſh. It will bear the Hardſhips of our Winters, if it be planted in either of the foregoing Soils under a warm Wall; but chiefly if it be kept dry. The *Flower-ſtems* of this *Plant* are commonly about a Foot high. The *Off-ſets* will blow in about three or four Years after they are taken from the old *Roots*.

## SECT VIII.

## *Of the* GLADIOLUS, FRITILLARIES, *and* IRIS.

THE *Gladiolus*, or *Corn-Flag*, bloſſoms in *May*, upon *Stalks* of almoſt two Foot high; the Flowers are of a Roſe-colour, and laſt about ſix Weeks. The *Fritillaries* are of ſeveral Kinds, bloſſoming in *April*; their Flowers are chequer'd with two or three Colours, ſometimes *White* and

*Red*, others are *Green* and *Brown*, or *Yellow* and *Black:* They are curious Plants, and are very proper (like other *Bulbs*) for *Parterres.* The *Iris* is likewiſe a numerous Tribe, ſome Sorts of them bloſſoming in *April*, others in *May* and *June:* Their *Flowers* are of ſeveral Colours, and their Figures different; they are all of them pretty Ornaments for Gardens, and may be increas'd by *Off-Sets* taken from their Roots when their *Stalks* are decay'd. Theſe, like other *Bulbs*, love a light Soil.

## SECT. IX.

## *Of the* COLCHICUM, *and* CROCUS.

THE *Colchicum* has a Root ſomewhat like the *Bulb* of a *Tulip*; but its Flower reſembles that of a *Crocus.* There are many Kinds of *Colchicums*; thoſe with *ſingle White* and *Pink-colour'd Flowers*, ſome with *double Pink-colour'd Bloſſoms*, and another Kind with *Flowers* chequer'd with *Pink-Colour* and *White:* All theſe bloſſom in *Auguſt* and *September* about four Inches above Ground; they delight in ſandy Soil, and will only bear tranſplanting about *Midſummer*, when the *Roots* are entirely at reſt. The *Saffron Crocus* blows at the ſame time with the *Colchicums*, bearing *Purple Flowers* of the ſame Height and Bigneſs: This *Plant* is of great Uſe (as well as Beauty) for the ſake of its *Piſtillum*, which is the *Saffron* uſed in *Medicine.* I have often wonder'd that this *Plant* is not more commonly cultivated in our Gardens, ſeeing how valuable a Commodity it produces, beſides the Pleaſure of its Bloſſoms, at a Seaſon when very few Flowers appear. This is one of the laſt kind Offices of the departing Summer, and ſhould be taken Notice of. The *Leaves* appear as ſoon as the *Flower* is paſt, and remain all Winter, which in the Spring ſhould be ty'd together in *Knots* to help the Increaſe of the *Roots*, which will be fit to remove or tranſplant about *Midſummer*. This *Plant* chiefly delights in chalky Ground, but will proſper alſo in a ſandy Soil. The way of preparing the *Saffron* for Uſe ſhould have been inſerted in this Place; but at preſent I have only an imperfect Account of it; and therefore ſhall defer it, till ſome curious Perſon in that Art has been pleaſed to communicate to me a more exact Receipt for its Management than what I have now by me, which I ſhall gratefully acknowledge. The ſeveral Kinds of *Crocus*, which bloſſom in the *Spring*, are the common *Yellow* and *Black-ſtriped*, the *Yellow Dutch*, the *early* and *later Purples*, and the *White Sort*: All theſe bloſſom about *February* and *March*, and make the beſt

## SECT. X.

## *Of the* SNOW-DROP, WINTER-ACONITE, DENS-CANINUS *and* ORCHIS, *or* SATYRION.

THE *Snow-Drop*, altho' it is a common Flower, ſhould not be wanting in *Parterres:* It is ſo fit a Companion for the *Crocus*, as well in reſpect to its Height, as time of Flowering, that it has been cuſtomary to plant them together. The double Sort is very agreeable, as I have obſerv'd it at Mr. *Whitmill*'s. Their Culture likewiſe is the ſame, ſo that one Trouble of the Gardener will ſerve for the Propagation of both; as likewiſe of the *Winter Aconite*, which is alſo one of the firſt Leaders of the Spring, beginning to diſplay its pretty *Yellow Bloſſoms* about the firſt Week in *January*. The *Roots* of this ſort of *Aconite* are not ſo regular in their Shape as the *Bulbs* of the *Crocus*, nor ſo misſhapen as the Roots of *Anemonies*; they are ſo ſmall, 'tis hard to find them when the Leaf is decay'd. This kind of *Aconite* will ſoon overrun the Ground where 'tis planted, as well by ſhedding its Seeds, as from *Off-Sets*, which its Roots freely put forth. The Flowers of it are never more than three or four Inches above the Ground. The *Dens-Caninus*, or *Dog's-tooth'd Violet*, is another *Dwarf* like the former; it produces its Bloſſoms in *March*, of a *White Colour*, ſomewhat tinged with *Purple*, like the Bloſſoms of the *Spaniſh Jeſſamine*. This *Plant* muſt be propagated like the others I have mention'd in this Section, and, like them, loves a ſandy Soil. The *Orchis* has many Varieties, which may be found in every Herbal. I ſhall mention only three or four Sorts, which are commonly cultivated by the Curious, ſuch as the *Bee-Flower*, the *Fly-Flower*, the *Lizzard-Flower*, and a more common Sort found in Meadows, with *Purple Flowers*: Theſe ſhould all be removed with Balls of Earth about their Roots, juſt when their Flower-Stems begin to appear above the Ground; they bloſſom about half a Foot high in *May*.

I ſhall now conclude this Chapter of *Bulbous-rooted Plants*, with acquainting my Reader, as a certain Rule which he ought to obſerve, that *Bulbs* are taken out of the Ground every Year only for the Preſervation of the Variegation of their Bloſſoms; but ſuch as are not admired on Account of their Stripes, ſhould be left ſtanding in the Earth at leaſt three Years, for the Benefit of their Increaſe; and alſo that the moſt ſafe time of removing *Bulbous Roots*, is when the *Leaves* are decay'd.

# CHAP. VII.

## *Of ANNUAL-FLOWERS, and PLANTS, their Culture and Management in Gardens.*

THE *Plants* which I ſhall treat of in this Chapter, are of that Nature, that the Method of Culture proper for one or two of them will be ſufficient to inform my Reader of the right way of managing all thoſe which may be comprehended under the Denominations of *Annuals*. In ſhort, the curious Planter has no more to do, than provide a Hot-Bed about *February* or *March* for the Seeds of the moſt tender Kinds of *Annuals*, and to prepare the Soil of his natural Garden-Beds for interring the Seeds of the moſt hardy Sorts about the middle of *March*; and that he may with more Eaſe be inform'd of the ſeveral Kinds which are now commonly uſed for the beautifying of Gardens, I ſhall give him an Account, in two ſeparate Sections or Tables, of their *Names*, *Stature*, *particular Beauties and Times of Flowering.*

## SECT. I.

### *Of the ANNUALS to be raiſ'd in a Hot-Bed.*

I. THE *African Marygold* has a large *double Yellow Flower*, blowing above two Foot high, in *May*, *June*, *July*, *Auguſt*, and *September*.

II. The *French Marygold* has a ſmaller Flower than the former, *Yellow* intermix'd with *Red*, near two Foot high, bloſſoming from *May* to *September*.

III. *Sweet Sultan*, three Sorts, with *White*, *Yellow*, and *Purple Flowers*; they ſmell like Muſk, and bloſſom two Foot high from *June* to *September*.

IV. *Capſicum Indicum*, or *Guinea Pepper*, with long and round Scarlet Fruit, for which it is only admired, begins to make a handſome Show in Gardens about *July*, and laſts till *September*. This *Plant* is about a Foot and a half high. The common man People in *Italy* pulveriſe the *Yellow Seeds* contain'd within the *Pods* of this *Plant*, and uſe it inſtead of *Pepper*; and Dr. *Compton*, late Biſhop of *London*, frequently eat of it in the ſame way.

V. *Marvel of Peru*, two Sorts; one with *Red* and *Yellow Flowers*, the other *Purple* and *White*: Theſe blow from *July* to *September*, two Foot high.

VI. *Amaranthus*, two Sorts; the *Tricolor* and *Cock's-Comb*; the firſt is only beautiful in its *Leaves*, which are variegated with *Scarlet*, *Yellow*, and *Green*; the ſecond is admired for its *Scarlet Flowers*, like *Cock's-Combs*. Theſe are Ornamental *Plants* from *July* to *September*, growing about two Foot high.

VII. *Convolvulus*, three Kinds; the *Major*, with a *Purple Flower*; the *Minor*, a *Blue Flower*, variegated with *Yellow* and *White*; and the *Scarlet* Flowering Kind: Theſe blow from *June* to *Auguſt*, and creep upon the Ground.

VIII. *Female Balſomes*, three Sorts; the *Roſe* Colour, the *Purple*, and the *White* Kinds: Theſe bloſſom about a Foot and a half high, from *June* till *September*.

IX. *Belvidere*, or *Pyramid*-Buſh, a pretty *Green*, without Flowers, about two Foot high.

X. *Buſh Baſil*, a ſmall *Shrub*, about a Foot high, with ſweet-ſcented *Leaves*. His Royal Highneſs the Grand Duke of *Tuſcany* preſented me one Year with above fifty different Sorts of *Baſils*.

XI. *Naſturtium Indicum*, or *Indian Creſſes*, two Sorts, one large, the other ſmall, has Flowers variegated with *Yellow* and *Scarlet*; they run upon the Ground, and blow from *May* till *September*.

XII. The *Senſitive Plants*, two Sorts, one of which is called the *Humble Plant*, becauſe the *Leaves* of it fall down to the Ground upon the Approach of a Man's Hand, and the *Senſitive Plant* curls up its Leaves by touching it: Theſe two muſt be conſtantly kept under Glaſſes all the Summer.

I muſt beg the Reader's Pardon if I introduce the *Tuberoſe* among the *Annuals* of the *Hot-Bed*, which every one knows to be a laſting *Bulboſe Root* in *Italy*; but as it is *Annual* with us, I hope to be excuſed: The *Roots* of it muſt be planted in the *Hot-Bed* with the other *Plants* of this Section, and muſt be kept from Water till the *Leaves* begin to put forth. In *July* and *Auguſt*, their *Flowers* appear upon *Stems* of three Foot high, which afford a moſt agreeable Scent.

For the more particular Management of the *Plants* I have here mentioned, my Reader muſt take Notice, that when the *Seeds* are come up, the young *Plants* ſhould be tranſplanted at four Inches Diſtance from each other, and ſhould not quit the *Hot-Bed* till the ſecond Week in *May*: They will then bear the Air of our Climate, if they have by Degrees been uſed to it.

SECT.

## SECT II.

## *Of the* ANNUAL PLANTS *to be ſown in the Natural Ground.*

THE Seeds of thoſe Flowers I ſhall treat of in this Section muſt be ſown in the Natural Earth in *March*, on the very Places where they are to blow, whether for Standard *Plants*, or in Spots, or for Edgings.

I. The *Annual Sun-flower* bloſſoms from *June* till *Auguſt*, with large *Yellow* Bloſſoms upon *Stems* of ſix Foot high.

II. The *Lark's-Heel* ſhould be ſown in Spots; it blows with ſeveral Colours upon *Stems* of three Foot high, from *June* till *Auguſt* or *September*.

III *Flos-Adonis*, ſown in Spots, blows a Foot high in *June* and *July*, with ſmall *Crimſon Flowers*.

IV. *Nigilla Romana*, bloſſoms in the ſame Month with the former; it bears a *Blue* Flower about a Foot and a half high.

V. *Garden Poppies* ſhould be ſown in Spots; their Colours are various, and their Flowers very beautiful, but not laſting; they appear in *May* and *June* upon *Stalks* about two Foot from the Ground.

VI. The *Dutch Wild Poppy*. This does not blow ſo high as the former; its Flowers are *Red* and *White* ſtriped, bloſſoming from *June* till *Auguſt*.

VII. *Cyanus*, or *Annual Bottles*, are of ſeveral Colours, bloſſoming in *June* and *July* upon *Stalks* of about a Foot and half high.

VIII. *Lupines*, three Sorts; the great *Blue*, ſmall *Blue*, and *Yellow* Flowering Kind: All theſe bloſſom in *May* and *June*; the firſt about two Foot high, and the others little more than half that Height; the *Yellow* has a pleaſant *Scent*.

IX. *Scarlet-Beans* are twining *Plants*, bearing Knots of *ſcarlet Flowers* from *May* till *September*.

X. *Everlaſting Flowers*, ſown in Spots, bloſſom about a Foot and half high in *June*, *July*, and *Auguſt*: Their Flowers will remain freſh for many Years after they are gather'd, and are *dy'd* of ſeveral Colours by curious Perſons for Flower-pots in the Winter.

XI. *Wing'd Peas*, ſown in Drills for Edgings, have pretty *crimſon* Bloſſoms, blowing about ſix Inches high in *May* and *June*.

XII. *Annual Stocks*, for Edgings, or ſown in Spots, bloſſom in *May* and *June*, bearing their Flowers of a *Pink* Colour, about ſix Inches high.

XIII. *Venus's-Looking-glaſs*, is proper for Edgings, or to be ſown in Spots: It bloſſoms the ſame Height, and at the ſame Time with the former, bearing Flowers of a *Violet* Colour.

XIV. *Venus's-Navel-wort* has *white* Flowers, is a pretty *Dwarf Plant*, fit for Edgings, or Spots; and bloſſoms alſo with the foregoing *Plant.*

XV. *Candy Tufts* are of two Sorts; one with *white*, the other with *red* Flowers: They are both proper for Spots, or Edgings, and flower with the former.

XVI. *Heart's-Eaſe*, or *Viola Tricola*, has its Flower variegated with *Purple*, *Yellow*, and *Red*: It is a *Dwarf*, like the laſt, and makes pretty Edgings. This alſo bloſſoms in *May* and *June.*

I have now no more to do than to remark, that all the *Annuals* I have mentioned in this Section will blow ſooner or later as their Seeds are put into the Ground; and I would adviſe the Curious to ſow ſome of their Seeds in every one of the Summer Months, if he would have them ſucceed one another in flowering; but the *Dwarf* Kinds eſpecially.

I ſhall here give him a Deſign of a Garden Bed divided into five Parts: The * middle Line A is proper for the talleſt *Plants* mentioned in this Treatiſe, the Lines BB for the middle *Plants*, and thoſe marked CC for the Loweſt; in all which Diviſions of the Bed he ſhould contrive to allot one third Part for *Perennial Plants*, one third for *Bulbous-rooted Plants*, and the like Proportion for *Annuals*; conſidering at the ſame time what Months in the Year each *Plant* will bloſſom in, and aſſort them in ſuch manner that all do not flower together or at one time, but that an agreeable Mixture of Flowers may continually be found in the Garden, ſucceeding one another as long as the Seaſon will permit; and this he may eaſily perform by the Aſſiſtance of theſe Papers.

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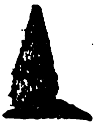
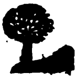
* *Fig. II. of the Third Plate.*

## *DIRECTIONS to* Gardeners, *who have not had the opportunity of travelling, with regard to ſome Particulars in laying out of* Gardens, *and ſome technical Words frequently mentioned in this* Treatiſe.

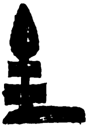
A *Pyramid Plant* is repreſented thus in a Draught; and when we have occaſion to place ſeveral of them upon a Ground Plat, they muſt be all ſet upright with that which we firſt deſign; ſo likewiſe the Shades muſt be all placed the ſame way.



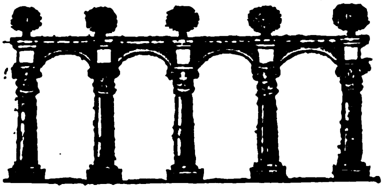
A *Headed Plant* is repreſented thus:



A *Pyramid Plant*, cut and divided, may be repreſented thus:

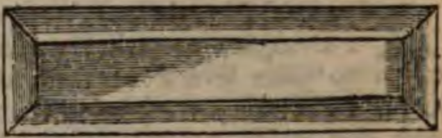


A *Collonade*, or *Arcade* in a Garden, is generally planted with *Yew-trees*, and may be expreſs'd thus: The Baſes and Capitals may be carv'd and gilt, or elſe made of *Wood*, painted with *Verdegreaſe Green*, to be taken off and put on when the *Trees* want Clip-

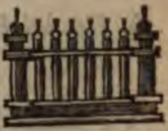


Clipping; for if theſe Ornaments are cut in the *Yew*, they will never be kept regular, and yet be very expenſive.

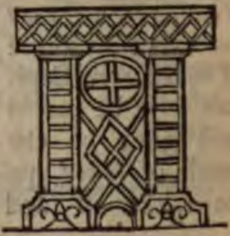
*Haha*, or *Foſſee*, are Terms of the ſame ſignification, tho' the firſt is a new coin'd *Word:* They mean a *Ditch*, or *Moat* to encloſe a *Garden*, whether the *Ditch* has *Water* in it or not; but the *Haha*, by the Cuſtom of five or ſix Years, intimates a dry *Ditch*, ſo regulated by Slopes, and ſo deep that it is unpaſſable. It makes a fine open *Fence* to a *Ground*. Sometimes when it cannot be made deep enough to be a *Fence* of itſelf, it is fortified with a *Palliſade* running thro' the middle of it. It may be expreſs'd in a *Plan* thus:— It appears very beautiful when the Slopes are well made, and cover'd with fine *Graſs-turf*.



*Palliſades* may be expreſs'd thus:— The Meaning of the *Word* is open *Pales* or *Rails*.

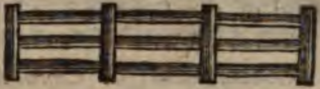


*Treliage-work* is an open *Work* of *Wood*, as the former; it is call'd alſo *Trellis-work*, and ſometimes *Eſpalier*, but with this difference only, that this is compoſed of *Rails* croſſing one another ſo as to be ſeen through, and the foregoing conſiſts of open *Rails* or *Pales* ſet upright; this ſort of *Work* however is commonly call'd *Treliage*, when it is made into *Portico's*, *Arbours*, *Pavilions*, and ſuch-

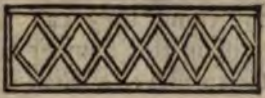


like, it is in that caſe commonly done with *Laths* croſſing one another, and turn'd into diverting *Figures* as the Builder ſees occaſion.

After this, one may explain that an *Eſpalier* for *Fruit-trees* ſhould be built after this manner, *viz.*



Or elſe of this kind:—



VERNAL means the *Spring*; ſo that if one wanted a Spring *Crocus*, one might ask for it properly, by calling it a *Vernal Crocus*: And if it is a Summer *Flower*, all *Flowers* of that Seaſon are *Æſtival*; ſo the *Flowers* of the Autumn are call'd *Autumnal*; and thoſe *Flowers* or *Fruits* which appear in Winter are call'd *Hybernal.*

*Laune* is properly an open *Paſſage* between any *Fences*, from whence comes the word *Lane*; but in the Gardening *Language* means any open View from a Point of Sight, where it is bounded by *Woods*, *Walls*, or ſuch-like: And yet how far are many from the Deſign, when, in their Draughts and Deſigns of *Gardens*, they lay down a large *Graſs-plat* for a *Laune?*

The *Vivacious Plant* is one that dies to the Root when it has flower'd, and ripen'd its *Seed*, riſing freſh from the Root again the next Seaſon: Such are *Tulips*, *Hyacinths*, *Aſters*, *Campanula's*, and ſuch-like. *Vivacious* is a *Word* which is uſed in *Gardening* on this account, though taken from the *French Word Vivace*, which ſignifies *Briſk*.

*Sempervive* is a Term uſed for ſuch Plants as are ever-living. The *Aloe Hepatica*, or that commonly call'd the *Barbadoes Aloe*, is call'd *Sempervive* by the *Sailors*, becauſe it will live ſeveral Years without Earth, even though it is hung up in a Room. And of the *Sempervives* is alſo the *Houſe-leek*.

*Convolvulent*, or *Convolvent*, is a Term uſed in *Gardening* for ſuch Plants as twiſt and twine about any thing they can lay hold on. Such Plants as twiſt in this manner take their Character from the *Convolvulus* or *Bind-weed*.

*Perdifol*, a Plant, when it is aſked for by that Name, is ſuch as drops its Leaves in the Winter; ſo an *Aſh* is a *Perdifol*, becauſe it loſes its Leaves in Winter.

*Opuntia* ſignifies an *Indian Fig*, and the *Indian Fig* is alſo call'd a *Prickly Pear*, by thoſe who have been abroad; and alſo the ſame Name is given it by the Inhabitants of *America*.

*Whirle*, or *Claſper*, is ſuch as grows upon *Vines*, with which they catch hold of any thing they can lay hold of. The manner of their taking hold of Trees, or ſuch-like, is by twiſting about them in a ſcrew-like manner.

*Fibre* or *Fiber* of a Root, is a String of a Root; ſo all Plants that have ſtringy Roots are called fibrous-rooted Plants. The *Polyanthus* and the *Auricula* have ſuch Roots. *Capillary* Roots are thoſe Roots which are as fine as Hairs.

*Bulbous* Roots are ſuch as are compoſed of many Caſes or Coats, which encloſe or cover one another; ſuch as the *Onion*, the *Tulip*, and ſuch-like.

*Tuberous* Roots are ſuch as are form'd of *Tubers* or *Knobs*, like the *Anemony* Root, and ſuch-like. The *Truffle* is alſo a *Tuber*. And the *Potato* Root is a *tuberous* Root.

*Herbaceous Plants* are ſuch as bring their Leaves but a little height above Ground, and are properly *Herbs*; ſuch as the *Violet*, the *Primroſe*, the *Nettle*, the *Dock*, *Graſs*, and ſuch-like.

*Gramineous Plants* are Plants that grow like Graſſes, as Corn of every ſort, ſuch as *Wheat*, *Barley*, *Oats*, and *Rye*, are *Gramineous*; for *Gramen*, in *Latin*, ſignifies Graſs, and *Gramineous* is taken from that Word.

*Germination* is a Term frequently uſed in *Gardening*, and ſignifies the Sprouting or Budding of a Plant.

*Terebration* is a Term uſed by the ancient Writers, ſignifying Boring: It was a Method uſed in the Firſt Times, for grafting of Trees; which was done by boring into the Wood of the Tree, and fixing a Cion in the Place.

*Pavilion*, in the Gardening Phraſe, ſignifies a *Summer-houſe*, tho' it rather means a *Tent*.

*Jett of Water*, is a Spout of Water, ſuch as is play'd in Fountains, or riſing in a Stream.

*Gerbe of Water*, is a large Column of Water riſing in a Stream. The beſt of this ſort, with the leaſt

Expence of Water, is in the Gardens at *Carſhalton*, belonging to *Thomas Scawen* Eſq; who was the Contriver of it. It ſeems to be a full Column of Water, of ten or twelve Inches diameter; but it conſiſts of many Spouts placed on the Verge of a Circle of that Diameter, and makes a very elegant Appearance.

*Caſcade* means a Fall of Water. The common Method of Caſcades in Gardens, is to let the Water fall over Steps, in a gentle Declenſion; as in that near the *Bath*, and more particularly the King of *France*'s Palace at *Marli*; as likewiſe at his Grace the Duke of *Devonſhire*'s at *Chatſworth* in *Derbyſhire*.

*Cataract of Water*, is a large Fall of Water from ſome Eminence; as if a River was to fall at once, twenty, thirty, or forty Feet, or more, as we have natural Inſtances in many Places.

*Sheet of Water*, is a Spread-fall of Water, which, by paſſing over a Level, repreſents ſomewhat like a Sheet, or Table-cloth. They are very beautiful in Gardens.

*Grotto*, or *Grott*, is properly a natural Cave; but as they are now made in Gardens, they are generally built with Stone, or Brick, with an arched Roof, and lined with Shells and ſhining Stones, intermix'd with artificial Coral and Corallines, with ſome Spouts of Water to be play'd at pleaſure: The Grotto is alſo cover'd with Earth, and turf'd, or elſe planted on the top with Flowering Shrubs, diſpoſed in the wildeſt manner they poſſibly can be; for the outſide Appearance ought to look rural. The fineſt of the kind that I have obſerved in *Europe*, is that belonging to *Thomas Scawen* Eſq; at *Carſhalton* in *Surrey*.

There are two ways of making artificial Coral for this Uſe; for the true Coral would be much too dear: Provide firſt ſome dry Branches of Trees that grow the moſt like the manner of Coral, or elſe with *Wyers*, make the Figure of a Branch of Coral; and then melt ſome *Bees-wax* and *Turpentine* together, and mix with it enough *Vermilion* to give it the Colour of Coral, and dip your prepared Branches in it; then let them cool and harden, and dip them a ſecond or third time, till they are fully perfect.

Or elſe melt *Brimſtone*, and mix *Vermilion* with it, and dip your Branches in that, managing of it as preſcribed above; this, if the Branches are not dry, will have Bliſters on them like rough Coral.

## *Of the* Colours *neceſſary for illuminating of Draughts and Deſigns for* Gardens, *with the Method of making them tranſparent.*

GARDENERS, when they draw Draughts, or make Plans for Gardens, on new Grounds, are generally obliged to buy *Colours* ready prepared in Shells; and tho' they are well mix'd, yet they give a Heavineſs to the Deſign. The tranſparent Colours are therefore the beſt, becauſe they carry off a Deſign for a Garden with a light Air. For this reaſon I have conſidered that tranſparent Colours will be of uſe to thoſe who make Plans or Draughts for Gardens, becauſe whatever is colour'd with them may be made as light and eaſy as one pleaſes; but in the handling of them I muſt give this Caution: If any of the Colours I ſhall here recommend, ſhould appear too thin or light at their firſt laying on, it muſt be imagin'd, that when the whole Draught is colour'd, it will look much darker, and become more heavy; ſo one can't lay them on too thin at firſt.

Greens are of the greateſt Uſe; and I ſhall begin with them.

To make a bluiſh Green we are to diſſolve *Verdegreaſe*, and render it ſo liquid, that when we paſs it over a Draught, the Drawing may be ſeen through it.

To prepare this Colour, take a quarter of a Pound of common *Verdegreaſe*, for the diſtill'd Sort will not do; break the *Verdegreaſe* a little, if it be ſoft, but if it happens to be of the harder Sort, beat it in a Mortar till it is as ſmall as Duſt or Scowring-ſand; put this in a Pipkin, and add to it a Pint of White-wine *Vinegar*; ſet this upon a gentle Fire and let it boil, then add a little white *Argol* in Powder, and keep it ſtirring till the *Verdegreaſe* is diſſolv'd: In the mean while touch the Stick you ſtir the Liquor with, upon Paper, till you find it of the Colour you deſire, and then, whether the whole Body of the *Verdegreaſe* is diſſolv'd or not, pour it off clear, and let it ſtand till 'tis cool before you put it into a Bottle, it will after a Day or two clarify itſelf; and then decant it and ſet it by for Uſe.

The remaining Part of the undiſſolved *Verdegreaſe* may have more *Vinegar* put to it, and ſetting it over the Fire as before, you may have a ſecond Quantity of Liquor.

This will make a delightful Colour to be uſed in the firſt Colouring of Slopes to ſhew the light Parts of them, and then take the following Colour to mix with it, in order to ſtrike ſuch Shades as may be thought proper.

The tranſparent Yellow to mix with the aforeſaid Green, in order for ſhading a Draught, and to make a Graſs Green, or to be uſed by itſelf as Yellow.

In the preparing of this yellow, we muſt provide about an Ounce of *French Berries*, which may be had at any *Colour-Shop*; and then take a Pint of River-water, or Rain-water, and ſet it over the Fire, with as much *Pearl Aſh* in it as amounts to a Drachm, and let it boil five or ſix Minutes to make a ſtrong *Lixivium*; then add the *French Berries*, and let them boil, keeping them ſtirring, till by touching a Paper with ſome of the Liquor, you find it of the Colour you deſire; and then paſs the Liquor through a Sieve, and as ſoon as it is cool, put it in a Bottle and ſtop it cloſe.

One may boil theſe *Berries*, till the Liquor will almoſt become red; but one may always know what Height it is brought to, by touching it upon Paper as above directed: A nice *Colouriſt* would chuſe two or three Sorts, to ſhade one another.

When we have theſe two Colours, by mixing them together, they will make as faint, or as ſtrong a Shade to the firſt Colour as you deſire; and by putting more of the Yellow than the firſt Green, mixing them well together, will make a fine Graſs Green: But a little Practice will bring any one to order it in any Colour he pleaſes. This will ſerve to colour Graſs-plats; but in the colouring of pyramid or headed Plants, lay on the *Verdegreaſe* Colour firſt, and ſhade with this; and then, for Gravel, mix a little Carmine with the Yellow, till you find it of ſuch a Height as may be neceſſary.

When you would repreſent Water, either in a Baſon or Canal, you may thin the firſt Green with common Water, to colour thoſe Places with only a ſmall Taint.

Subjects of this nature cannot be more eaſily explain'd than in the Method I have followed: And in the next Part, I propoſe to treat of the

Improvement of *Fruit-Trees*, *Kitchen-Gardens*, and *Green-Houſe Plants*; all which I ſhall advance ſomething new upon; and muſt repeat the ſame Deſire I have before done to the *Curious*, to communicate the Obſervations that fall in their way upon the particular Parts of *Planting* and *Gardening*.

*The End of the Second Part.*

# NEW IMPROVEMENTS OF *Planting* and *Gardening*, BOTH Philoſophical *and* Practical:

CONTAINING

The beſt Method of Improving *Fruit-Trees*, *Kitchen-Gardens*, and *Green-Houſe-Plants*.

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Illuſtrated with COPPER-PLATES.

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PART III.

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By *RICHARD BRADLEY*, F. R. S.

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The SEVENTH EDITION.

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*LONDON*: Printed for A. BETTESWORTH and
C. HITCH, J. and J. PEMBERTON, J. and P. KNAPTON, and D. BROWNE, MDCCXXXVIII.

dation of its Worth. But that my Imperfections may not entirely take ſhelter under ſo great Authority, I do aſſure Your Lordſhip, that I have omitted no Pains to make it as complete as I could; and what it ſtill wants of being ſo, may well be imputed to my Diſtance from your Lordſhip's improving Thoughts, by the ſhort Experience I have had of them, in relation to this Subject; I am ſure that my Obſervations have loſt much for want of ſo juſt Corrections.

*My* Lord,

It would be as improper in me, as diſagreeable to you, to talk of the great Merit and Eſteem You ſtand in with all Mankind. The Publick feels the Benefit of all Your Actions, and will do You Juſtice without my reminding them. My Hopes of not offending Your Lordſhip ariſe wholly from the Uſefulneſs of the Subject of this Work; and I humbly beg it may be accepted as an Inſtance, that I can diſtinguiſh a little, as well as the reſt of the World, in my profeſſing myſelf,

*My* Lord,

*Your Lordſhip's moſt Dutiful,*

*And Obedient Humble Servant,*

R. Bradley.

# NEW
# IMPROVEMENTS
# OF
# *Planting* and *Gardening*,
# BOTH
# Philoſophical *and* Practical.

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## Of FRUIT-TREES.

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## CHAP. I.

### *Of the* VINE, FIG, L'AZEROLE, *and* MULBERRY.

THE Fruit I ſhall treat of, is known all over the civilized Part of the World; and its Qualities more generally admired than any other Fruit growing upon the Face of the Earth. And yet, notwithſtanding the vaſt Tracts of Ground in *Europe* and elſewhere, which are found planted at this day with *Vines*, there is hardly any *Plant* ſo unſkilfully ordered in our *Engliſh* Gardens, or ſo little underſtood by our Gardeners.

## SECT. I.

## *Of the* VINE.

THE End of Planting *Vines*, is certainly to have good ſtore of *Grapes*; but the Way to attain a large quantity of good *Grapes*, does not only depend upon the Choiceneſs of the Sorts we plant, the Nature of the Soil they require, and the proper Situation for them; but, above all, the Times and Methods of Pruning are abſolutely neceſſary to be underſtood.

The Kinds which I find to ripen beſt in *England*, are the *July Grapes*, the *Black-Currant Grape*, the *Early Sweet water Grape* lately brought from the *Canaries*, the *Arbois*, or *French Sweet-water Grape*, the *Burgundy*, and *Morigon*; which are all ripe with us by the middle of *Auguſt*, if rightly managed, and the Seaſon be kind: And after them, the *Muſcadines*, *Parſley Grapes*, *Fronteniacs*, and *Claret Grapes*. I have ſeen all theſe in great Perfection with us, but I know not of any other Kinds early enough to ripen well in our Climate.

'Tis then of theſe Kinds I would chiefly adviſe to be propagated; which may be done, either by laying down the young Branches as ſoon as the Fruit is gather'd, or by making Plantations of Cuttings at that time, always minding to let a Bud or two of the Layer or Cutting be under Ground; for it is from thoſe Buds only the Roots put forth. I have alſo frequently made Layers in *March* and *April*,

*April*, which have been fit to tranſplant the *Michaelmas* following; and I have known it practiſed to draw a young Branch thro' the Hole at the bottum of a Garden-pot, about *Chriſtmas*, and then filling the Pot with Earth, it has took root, and been cut from the Mother-plant the *Michaelmas* following with the Fruit upon it. The *Vines* thus raiſed in Pots, will hold their Fruit good almoſt till *Chriſtmas*, if they are ſhelter'd from the Weather in a Green-houſe, or ſome ſuch-like Place; and it is eaſy to conceive how pleaſant it will be to have them thus brought growing to the Table in a Deſert.

By what I have obſerved in planting of *Vines*, the Month of *February* is the beſt, if the Weather be open; and great Care muſt be taken in the Removal of this Plant, that the Roots be not too dry before it be re-planted; for that would greatly endanger it: Therefore wet Moſs wrapped about the Roots, if they are to be ſent to any remote Place, has been practiſed with good Succeſs.

Concerning the Soil proper for *Vines*, I ſhall give the firſt Hint from that ingenious and candid Piece of Mr. *Lawrence*'s; where, with ſo much good Reaſon, he tells us, that he cannot eaſily be brought to think that any Soil or Situation can be too dry for the Roots of the *Vine*, after having ſeen at *Barnwall* near *Oundle* in *Northamptonſhire*, a flouriſhing *Vine* grow from between the Joints of an old Caſtle Wall near twenty Foot high from the Ground, which he was told produced admirable *Grapes* when it was well managed. This Obſervation of that curious Gentleman might be ſufficient of itſelf to inform us of the Property of the Soil required for *Vines*, without ſeeking after other Experiments to ſatisfy us in it.

In the Gardens (late of my worthy Friend Mr. *Balle*) at *Cambden-Houſe*, there are now growing ſeveral *Vines* in the Walls; ſome of which were planted there by that Gentleman's Direction, and one in particular, which is a *Muſcadine*, produces every Year fairer Bunches of Grapes, much ſweeter, and earlier ripe (at leaſt a Fortnight) than any other *Vines* in the Garden; altho' there is the beſt Collection of forward Grapes I have yet met with in *England*.

But, yet farther: If we take a view of the *Vineyards* abroad, which afford the richeſt and beſt Wines, we find the Soil either rocky, or gravelly. The *Chianti* Wine of *Italy*, for example, grows upon a high Ground, in a rocky Soil, like to that which they make Lime of; and the ſtrong *Spaniſh* Wines are the Growth of the Mountains, which will hardly produce any other kind of Plant, they are ſo extremely dry: In a word, all the Places which I have ſeen or heard of, which produce good Grapes, have a dry, hot Soil, and are ſomewhat mountainous.

From ſuch Obſervations, and ſome Experience I have had in the Culture of the *Vine*, I find chalky Hills, ſuch as are frequent enough in *Oxfordſhire*, are very proper to plant *Vines* upon, if they lie well expoſed to the Sun; ſo hot, gravelly Ground, which lies dry and warm, will produce better Grapes than any of the rich Soils prepared with Horſe-dung; but in a Garden where either of theſe Soils are wanting, the Rubbiſh of ſome old Building will very well ſupply the Defect, if it be well mix'd (about one third Part) with the Earth about the Roots of the *Vines*.

I think I need not ſay how much the Ripening of ſome Sorts of Grapes depends upon a good Wall and warm Expoſure, and that even with thoſe

Helps we ſometimes fail of ripe Grapes; it may not be amiſs then, to conſider of ſome Ways that may expedite the Budding out of the *Vines*; and conſequently by making them bloſſom earlier than uſual, may haſten the Growth and Ripening of the Fruit while we enjoy the Summer Sun.

As the proper Soil and right Expoſure for *Vines* contributes to the early ripening of Grapes, ſo the right Seaſon for general Pruning likewiſe is helpful to the ſpeedy Perfecting of the Fruit, as I ſhall ſhew afterwards; but ſhall firſt take notice of an Obſervation or two of *Vines*, that were made to ſhoot near two Months ſooner than Nature would of herſelf have given them Motion: In *Kenſington* I have obſerved a *Vine* that happen'd to be planted againſt a Baker's Oven, to ſprout in the Beginning of *March*, and continue from that time to ſhoot vigorouſly all Summer; and although it had very little Advantage of the Sun's Heat, and grew in a ſtiff, wet Ground, the Grapes ripen'd much ſooner than any others of the ſame Kind. But at the *Pot-Houſe* at *Fulham*, where the Soil is ſandy, and the Expoſure warm, there was a *Vine* planted againſt an Oven which was conſtantly kept hot for baking of Earthen Pots, that began to bud about *January*, and would, as I am inform'd, have ripe Grapes in *June* by the help of a Glaſs Frame which was uſed to cover it in ſevere Weather: And ſo to plant a *Vine* againſt the Back of a Chimney, where a Wood or Turf Fire is conſtantly kept, ſo as to warm the Bricks, it will by that means ſprout early, and have its Fruit ſooner perfected than other *Vines* which have not that Help; as I have experienced.

Suppoſing then that a *Vine* by this means is brought to ſhoot or bloſſom earlier than uſual; let us not deceive ourſelves with the too common

Opinion, that the expoſing the Bloſſom or young Fruit immediately to the Sun, will be a Means of haſtening its Maturity, or making it large; and, as ſome do, to pull away the Leaves from about it; for that rather retards the Ripening, than forwards it, by contracting ſo much the outſide Skin of the Fruit, that it cannot receive the Nouriſhment it ought, and would otherwiſe admit of; and I am ſure, whoever knows any thing of the Growth of *Vegetables*, will allow, that the Shade always contributes to the large Growth of Plants and Fruits, and that the Heat of the Sun is chiefly requiſite for the ripening of Fruits; therefore let the young growing Fruit always remain ſhelter'd with its Leaves till it be full grown, and then begin to lay it open to the Sun for ripening.

I ſhall next conſider the *Pruning of Vines*, eſpecially of thoſe growing againſt Walls; for it is a right Knowledge of the Seaſons, and Manner of Pruning, which chiefly contributes to give us a plentiful Store of good ripe Fruit.

It is commonly practiſed by the Gardeners to prune their *Vines* in *December*, which Seaſon they hold to be much better than the Months of *January* and *February*; for the *Vines* pruned in thoſe Months are apt to bleed away too much of their Strength; and it is as common among them to leave four Buds or Eyes upon every pruned Branch, whether they are ſtrong, or weak Shoots. I have, I muſt confeſs, ſeen *Vines* that have been ſo order'd, produce good Fruit; but am aſſured, whoever was to ſee the *Vines* which are now in Mr. *Whitmill*'s Garden at *Hoxton*, would go another way to work. It is his Method to prune his *Vines* ſo ſoon as the Fruit is gather'd, and according to the Strength or Thickneſs of the Branch he leaves growing, he allows a due Length, a very ſtrong one about a Yard long, and thoſe of leſs vigour are pruned ſhorter in proportion. By this Method of Pruning, I obſerve he never fails of large quantities of Grapes, ripening very well, and much earlier, than any of the ſame Kind pruned after the uſual manner.

The *May* after this Pruning, our *Vines* muſt be again look'd over, and then diſburden'd of the ſmall weak Shoots, rather by breaking them off, than cutting; and ſuch Shoots as have then Fruit appearing upon them, muſt be topp'd, ſo as to leave a ſufficient number of Buds above the Fruit, upon each Branch, in proportion to its Strength or Thickneſs, obſerving always not to prune nearer to the Fruit than three or four Buds.

In *June* the *Vines* muſt be examin'd for the third time; and the barren Branches, which will then be ſhot to a great Length, ſhould be pruned to ſuch Lengths as anſwer to their Vigour, or elſe taken quite away, if they are not wanted to furniſh ſome Vacancy on the Wall, or to be laid up for Fruit-bearing the next Year.

About the beginning of *Auguſt*, the Grapes of the forward Kinds will be full grown; and then we may again give a fourth Pruning, in order to expoſe the Fruit to the Sun for ripening; but yet, let it not be left too naked of Leaves, leſt it be injur'd from the cold Dews, which begin to fall the latter end of the Month.

In the Summer Prunings of *Vines*, due Regard ought to be had to the Number of Branches which the Wall will require to be laid in the Winter to ſupply the Place of old Wood, which ſhould then be taken away; for it is a certain Rule, that no Branches of the *Vine* bear Fruit, but ſuch as are the Produce of the laſt Year; and thoſe, if they are diſcreetly managed, ſeldom or never fail to furniſh Fruit in abundance.

Thus I have ſet down what I know concerning the Management of *Vines* againſt Walls, and ſhall now proceed to offer ſome few Hints concerning the Way of ordering them in *Vineyards* for the making of Wine, which I am ſatisfy'd may turn to as good account in *England*, as they are known to do in many Parts of *Germany*.

If a *Vine* will proſper upon a Chalk, as we are certain it will, how trifling would be the Expence to plant an Acre of ſuch Ground with *Vines* in ſome well-expoſed Place, on the Declivity of a Hill? The yearly Income of ſuch Land can hardly be a Shilling, if it be ſtrictly Chalk; and the *Vines* may be raiſed as I have directed, with very little Trouble; and then for the Charge of Planting, a Week's Work for a Man would more than do it, ſeeing there is no neceſſity of manuring the Ground. The whole Expence before they began to bear Fruit, which would be the third or fourth Year after Planting, could hardly amount to twenty Shillings; ſo that I ſee no room for any Objection upon that account. The chief thing will be, to ſhew upon reaſonable Grounds, that Plantations of this kind will produce ripe Fruit; and that I think may be made appear very plainly.

In the firſt place, plant only the forward Kinds of Grapes, which have often enough been experienced to ripen in open Borders, without the help of a Wall; witneſs the *Vines* at a *French* Gardener's at the Back of *Swallow-ſtreet*, *London*; thoſe at the Honourable ——— *Johnſon*'s, Eſq; at *Twittenham*; the *Vineyard* near *Bath*; that near *Greenwich*, and almoſt in every Nurſery.

*Secondly*, The Chalk-Hill, which I propoſe to be planted with *Vines*, will certainly reflect as much Heat upon the Fruit, as any Wall whatever; and every one knows that the Cold in thoſe Parts of *Germany* where the *Rheniſh* Wines are made, is much more Powerful than what we feel in *England*; ſo that ſince we need not be apprehenſive of too much Cold in the Winter, and may reaſonably expect as much, if not more Warmth in the Summer, our *Vineyards* may certainly afford as good Wine as what we receive from the *Rhine*, and ſome Places in *France*, and conſequently turn to the Owner's Account.

But that we may anſwer every Objection that may be made againſt Planting of *Vineyards* in *England*, give me Leave to recite what I have heard relating to the making of Liquors with unripe and ſour Fruits. In *Devonſhire* a Gentleman made a Veſſel of *Verjuice* of *Crab* or *Wilding-Apples*; which being plac'd in his Cellar among other Liquors, was not uſed till about three or four Years afterwards, and was then found to be ſo palatable and exceeding pleaſant, that he now prefers the Liquor made of ſuch wilding ſour Fruit (after it has had time to digeſt) to any *Cyder* of that Country. So I have known *Verjuice* made of half-ripe Grapes, that after two or three Years keeping in a Veſſel, has become delicate Wine; and the *Rheniſh* Wines, when they are newly made, are ſo ſour, that they are not fit to drink; but after ſeveral Years ſtanding, afford us that incomparable Liquor which is called *Old Hock*; and on the contrary, ſweeter Liquors are apt to turn ſour by keeping; which is one Argument to prove, that a continued Motion and Alteration of the State of every created Atom, is requiſite to ſupport the Frame of Nature;

ture; and, as I conceive, was it poſſible that any one, the leaſt Particle of Matter, could be deſtroy'd or lye ſtill, all Life and Being muſt ceaſe; ſuch Dependency has the greateſt Bodies upon the ſmalleſt Beings, or the moſt inveterate Oppoſites upon one another. The ſkilful Chymiſt knows how to ſeparate the differing Parts ſubſiſting in Liquors from one another; the volatile Spirits from the more watry Parts, and thoſe from the more oily; ſo that we find every Liquor contains a Chain of certain Qualities; and Liquors are only differing, in that one has perhaps the *Acid* more prevailing, the other the *Alkali*, or either of thoſe Powers more or leſs predominant at certain Seaſons. The Sweet, when it prevails in any Liquor, is not without the Sour ſubſiſting in it, altho' it has not Power to appear till its Oppoſite begins to decline; and ſo the Sour is not without the Rudiment of Sweet, although it cannot be diſcern'd till the Time of Ripeneſs approacheth. But I ſhall forbear advancing any farther at this time in ſo vaſt a Field, and proceed to the Buſineſs in hand: That our Chalk Hills, and thoſe that are accounted the moſt barren Mountains in *England*, are very proper to plant *Vines* upon, and the higher the better; for 'tis obſervable, that ſeveral *Vineyards* in one Country, planted with the ſame ſort of *Vines*, produce very different Wines; thoſe on the Tops of Hills much ſtronger and better than thoſe which lie lower; inſomuch that one Barrel of the Mountain Wine will ſell for much more than that growing in the Valley; and ſo far as I can learn, the ſtrongeſt Wines are always the Produce of the higheſt Mountains.

To plant a *Vineyard*, let the Place where each *Vine* is to ſtand be open'd and prepared before any of the Plants are taken out of the Nurſery; let them ſtand four or five Foot aſunder in Lines; and the moſt proper Seaſon for their planting is in the firſt open Weather in *February*. It is uſual to prune theſe *Vines*, according to their Strength, the *September* before tranſplanting, leaving not more than four Buds on the ſtrongeſt, and then they will require no other Care the firſt Summer but to keep them clear from Weeds; about the End of *September*, after planting, ſhorten the Shoots of that Summer according to their Strength, and the Summer following the ſtrongeſt of them will begin to ſhew a little Fruit; this ſecond Year the breaking of the ſmall Shoots and ſuperfluous Branches ſhould be carefully done in *May* and *June*, and two or three Shoots only maintain'd on each *Vine*, according to its Strength, and thoſe not to be ſhorten'd till the *September* following; theſe ſhould be ſupported by Stakes or Poles, ſo that they may not run cloſe to the Ground, but about a Foot above it, leſt too much Wet ſpoil and rot the Fruit; for the nearer the Ground the Grapes grow, if they do not touch it, the riper and ſweeter they will be, and the ſtronger the Wine. In a word, continue from time to time this Method to preſerve young ſtrong Shoots every Year to bear the following Summer in proportion to the Strength of every *Vine*, cutting away all the old ones, which (were they to remain) would only rob the Plants of their Strength.

But if notwithſtanding all the Care of pruning and weeding the *Vineyard*, the *Vines* are not inclined to produce large Bunches of Fruit, lay Oxe's Blood or Carrion to their Roots about *November*, or, as it is very common in all the *Vine-*

*yards* Abroad, manure them with human Dung that has lain ſome time to meliorate, and loſt its Odour. This way of enriching Ground has very evidently the beſt Effect upon Fruit-Trees of any other Manure whatever, but *Vines* chiefly, which will not bear any other.

With this Management I doubt not that our *Vineyard* will produce good Store of Grapes in five or ſix Years after Planting; and if the Owner ſhould then be diſpoſed to try what Wine they will produce, let him gather the Fruit when they are full ripe, in dry Weather, if poſſible; then put them into the Vat, and have them trodden by Men to preſs out the Juice without breaking the Stones; or where the Quantity of Grapes is not large, to preſs them with the Hands will do as well, and ſeems more cleanly: The Liquor thus preſs'd ſhould ſtand in the Vat about fifteen Days with the Huſks and Stalks in it to ferment, if the Grapes were dry when they were gathered, otherwiſe not much above half that time before the Wine be drawn off, leſt it turn ſour, as it will be apt to do if the Grapes were gather'd wet. Some who are very curious in their Wine, pick off the damaged Grapes from their Stalks, before they make the Wine, which is ſo rich in its Flavour, that to compare it with the Wine made the common Way from the ſame *Vineyard*, it does not appear to be of the ſame Growth.

It is obſervable, that according to the Management of the *Vines*, the Wine is ſtronger or weaker: Thoſe *Vines* which have their Liberty to run up high Trees, and are never pruned, afford the ſmalleſt Wines; others which are kept pruned, and have their Branches ty'd to Stakes about four Foot high, make ſtronger Wine than the former; but the ſtrongeſt of all is made of thoſe Grapes which grow near the Ground, as I have directed, and are ſometimes after gathering hung up to dry for three or four Days before they are preſs'd, which they ſay exhales the watery Parts.

## SECT. II.

## *Of the* FIG.

THE *Fig* delights in the ſame Soil with the *Vine*, and may be propagated either from Suckers or Layers, and alſo from Seeds. The Suckers are beſt ſeparated from the old Roots the beginning of *March*, and ſhould then be tranſplanted without cutting any of their Tops; for this, above all other Trees, ſuffers moſt by Amputation, and indeed ſhould never be pruned but in *July*. The Layer ſhould be order'd like thoſe of the *Vine*, and the Seeds, as I have been inform'd, will readily come up if they are ſown in Rubbiſh, or ſuch like Soil, about *March*. It is moſt commonly practis'd in *England* to plant *Fig-Trees* againſt Walls, becauſe it has been thought the Fruit will not otherwiſe ripen in our Climate, but that is a Miſtake; for in ſeveral Gardens about *London* I have ſeen them grow in Standards, and proſper and bear Fruit in more Abundance; and much better, in my Opinion, than any I have yet ſeen againſt Walls, for as they are endanger'd by pruning, ſo they like as little the Confinement they are oblig'd to againſt Walls.

I have been told of a *Fig-Tree* near *Windſor* (that grows wild, without Culture, in an old Gravel-pit) which is ſo extremely large, that many Buſhels of *Figs* are gather'd Yearly from it; and I know of ſome old *Fig-Trees* that have been neglected be inoculated or grafted by approach upon Stocks of the *White Mulberry*, which naturally grows ſtrait, and will make a handſome Tree very quickly. I am well aſſured this would do much better than raiſing them by Layers, which is the common way, or from Seed, as ſome have practis'd.

The *White Mulberry* may be increas'd either by Seeds ſown in *March*, or laying the youngeſt Shoots into the Earth at that time. The Seeds will ſprout about three Weeks after ſowing, and be near ſix Inches high the firſt Summer, and the Layers will be fit to take off the Spring after they are laid into the Earth.

By either of theſe ways we may ſoon raiſe Store enough of young Plants to ſupply a large Quantity of *Silk-worms*; for which end the *Chineſes* ſow large Fields of this Sort of *Mulberry* to mow them down from time to time as they have Occaſion; and the People of *Italy* plant Trees in the Roads, and every vacant Corner of their Ground. I have heard of a Man near *Utrecht*, who has lately begun the Trade of Silk, and in the Year 1716, as I am inform'd from good Hands, made ten or twelve Bales of *Silk* from his own *Worms*: And, as far as I can underſtand, were *Silk-Worms* more regarded in our Climate, they would do as well with us as they do in *Italy*, where they are ſubject to ſo many Hazards, but chiefly to be ſpoil'd by the violent Thunders frequent in thoſe Parts: No Man there is certain of a good Silk-Harveſt, till the Worms have actually ſpun their Silk; for if Thunders happen to come juſt when the Worms are going to ſpin, they will immediately drop and infallibly periſh. It would be well to try whether the firing of Guns near ſuch Trees as are infeſted with Caterpillars, will not deſtroy thoſe Inſects.

CHAP.

## CHAP. II.

## *Of Kernel-Fruit; ſuch as the* APPLE, PEAR, MEDLAR, *and* QUINCE.

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### SECT. I.

### *Of the* APPLE-TREE.

THERE is no kind of Fruit better known in *England* than the *Apple*, or more generally cultivated. It is of that Uſe, that I hold it almoſt impoſſible for the *Engliſh* to live without it, whether it be employed for that excellent Drink we call *Cider*, or for the many Dainties which are made of it in the Kitchen: In ſhort, were all other Fruits wanting to us, *Apples* would make us amends.

It may therefore be expected that I ſhould be the more particular concerning the Culture of this Tree; but conſidering how many have writ of its Management, and how generally it is propagated with good Succeſs, I ſhall not enlarge upon it ſo much as otherwiſe I ſhould have done.

To ſet down the ſeveral various Names of *Apples*, would be a Work almoſt impoſſible, ſeeing how many various Kinds are yearly produced from the Kernels, in almoſt every County in *England*; and where they happen to prove good, either for making *Cider*, or Table-uſe, have Names given them according to the Mind of the Perſon that rais'd them: However, as every kind of *Apple* will not do well in *Eſpalier*, I cannot well avoid mentioning thoſe few Sorts which I have approv'd to be the moſt proper for Hedges; and the rather, becauſe their Names are generally known to every Nurſery-Man about *London*. For that Uſe then, the *Codlin*, the *Nonpareil*, *Golden-Pippin*, *Kerton-Pippin*, and *Holland-Pippin*, ſeem to be the beſt. I have found theſe Kinds to bear plentifully, and produce Fruit upon their loweſt Branches; and I am perſuaded whoever delights in Gardens will not be without *Eſpaliers* of them, as well for the ſake of the great quantity of Fruit they will produce, as for the Ornament they afford to a Garden, and the good Shelter they yield to all the under Race of Kitchen-garden Plants, which are encompaſs'd with them.

I have found this good by incloſing the Quarters of a Kitchen-garden with *Eſpaliers* of Fruit, that as they loſe their Leaves in the Winter, they then obſtruct none of the Sun's Rays from paſſing directly to the Herbs planted within them; and in the Summer, when they are cover'd with Leaves, they afford that Shade which is ſo requiſite for the good Growth of many Plants; and beſides theſe Conveniencies, being tied up to Poles, and kept in good order, the very Borders they are planted in are as capable of receiving into them Herbs or Flowers, as if they were plain and open, and not any Trees planted on them.

The *Codlin*, which is the firſt of the *Apples* I have named for this Uſe, is propagated from Suckers taken from about the Roots either in *November* or *March*, and the other Sorts are increaſed by grafting upon *Crab-ſtocks* in *March*. If they are deſigned for tall Hedges, or if for Dwarfs, or for *Eſpaliers* of ſmall Heights, then upon *Paradiſe-Stocks*; the Soil which theſe and all other *Apples* ſeem to delight in, is a Medium Earth between Sand and Clay; which they proſper in, if it be freſh, rather than with a Mixture of Dung among it.

I find from Experience, that all *Kernel-Fruit* ſuffer greatly by Pruning, and it is by the unſkilful Management of the Knife they ſo frequently are apt to canker, and ſometimes quite periſh; for my own part, that I may ſomewhat curb the Uſe of the Knife, I chuſe to break off the Buds, which would produce luxuriant Branches, when they firſt appear, rather than leave them to be cut from the Trees when they are full grown, which is commonly when the Sap is at reſt. In *May* it is eaſy to diſcern what Buds are ſhooting for our Uſe, *i. e.* which will become Branches either to fill the Vacancies of our *Eſpaliers*, or make Fruit-Branches; and it is at that time that I diſbud the Tree of the others, which I eſteem uſeleſs, for then then the Sap will heal the Wounds.

An ingenious Perſon, who knows that the Shoots of *Apples*, *Pears*, and ſuch-like *Kernel-Fruit*, will not bear till they are two Years old, will always contrive to lay in Store of Branches every Year into his *Eſpaliers* to ſucceed one another in Fruit-bearing; for the ſame Branches will produce Fruit but once, and when that is over (in *Eſpaliers*) they ſhould be taken away in proper Seaſon, to make room for the others which are coming forward. Such Pruning indeed cannot be avoided on *Eſpaliers*, no more than taking away the *Autumn* Shoots; but the diſbudding them in *May* will prevent a great deal more, which otherwiſe there would be occaſion for; ſo that upon an *Eſpalier* well order'd, we ought to ſee Wood laid in, of three Summers, the one with Fruit, others to knot for Bloſſoms, (which Work Nature always contrives to do in the Bud the Year before they bloſſom) and the third Sort new Shoots to follow in their turn; for Example, in *Auguſt*, there ought to be upon our *Eſpaliers* about one Third of the Branches with Fruit, one Third of the Branches which have ſhot in the Year, and the like Proportion of Branches knotted to bloſſom the next Spring. About *Midſummer* is the beſt time to tie the Shoots of that Summer to the *Eſpalier*, and diſburden the Tree (eſpecially if it be weak) of its ſuperfluous Shoots; let the Branches be tied about four Inches apart at leaſt, for nearer than that Diſtance would be too cloſe: Hedges thus dreſs'd would not be ſubject to over-bear themſelves, but give every Year a moderate Proportion of Fruit, large and good.

It is obſervable, that ſome of the Summer-kinds of *Apples* and *Pears* will produce Fruit upon the Branches that ſhot the Summer before, and upon ſuch Trees the Wood of two ſeveral Years may only be left; but the Winter-fruits which ripen late, are always the Produce of older Wood.

Between Leaf and Leaf the Gardeners commonly find a time to prune off all the *Autumn* Shoots, as well from their Standard-Trees, as from their *Eſpaliers*; and then diſburden them from ſuch Wood likewiſe as they judge unprofitable; but the Skilful have always this Rule before them, that the moſt weak Trees are firſt pruned, and thoſe which are very luxuriant are left till *March*.

The Planting of *Apples* or *Pears* for *Eſpaliers* is beſt done at the Fall of the Leaf, leaving about ten or twelve Foot between Tree and Tree, and the Rails made of *Aſhen Poles* may be put up the following Summer.

For *Dwarf-Apples*, I believe every one will allow that thoſe grafted upon *Paradiſe-Stocks* are the beſt; I mean for their keeping in a ſmall compaſs, and bearing abundance of Fruit with very little Pruning: I have known them frequently cultivated in Pots, ſometimes ſo full of Fruit, that the *Apples* themſelves have weighed more than the Tree and the Pot they grew in. At great Entertainments how delightful would it be to ſet ſeveral Sorts of *Apples*, growing, upon the Table? It would be a kind of moveable Orchard, which could ſeldom fail to bear good Fruit, as the Trees might be ſhifted from place to place, either to put them out of the way of Blaſts, or place them in the Shade for Improvement of the Growth of the Fruit, and in the Sun for the due ripening them.

*Paradiſe-Stocks* are raiſed with us by planting the Cuttings or Suckers of them in *Autumn*; they ſtrike root, and grow freely, ſo as to be fit to graft on in two or three Years: They are brought originally from *France*, but now they are to be met with in almoſt every Nurſery about *London*: And for *Standard* and *Hedge-Apples*, *Crab-Stocks* taken out of the Woods, or *Seedling-Plants* of about three Years old are the beſt.

There are two Ways of planting an Orchard; the one to make it entirely for Fruit, the other to plant the Trees at ſuch Diſtances as to admit of an Under-crop. I muſt confeſs, was I to make an Orchard to pleaſe myſelf, I would firſt divide the Ground into Parcels, allowing handſome Walks between them, which ſhould ſome of them be fenced on the Sides with *Eſpaliers* of Fruit, others left open with Borders only on their Sides, adorn'd with Rows of *Standard-Apples*; ſuch as *Golden-Pippins*, *Golden-Renets*, *Ruſſet-Pippins*, *Kitchen-Renets*, *Pearmains*, *Green-Ruſſets*, and ſuch-like ſerviceable Fruits, that will remain good for ſeveral Months.

In theſe ſeveral Quarters plant your Trees at about ſixteen Foot diſtance, if you deſign a cloſe Orchard; or near thirty Foot aſunder, if the Ground is deſigned for *Beans*, *Peas*, or ſuch-like Under-crops. In planting this Ground for either Purpoſe, ſuppoſing it three Acres, let two Thirds at leaſt bear *Apples*, and the Remainder be allotted for *Pears*, *Plumbs*, *Cherries*, and a *Mulberry-Tree* or two. The Ground thus planted may be fenced about with Hedges of *Filberds* and *Barberries*, to make it ſtill the more compleat and delightful.

## SECT. II.

## *Of the PEAR.*

THE *Pear*, in my Opinion, is a Fruit no leſs pleaſant than the *Apple*, although it is not of that general Uſe: However, we are beholden to it for no ſmall Entertainment in the Winter, when other Fruits are ſcarce; whether we eat them raw, or baked, they have their Excellencies. The Varieties of *Pears* are almoſt without number, if we were to join the ſeveral *French* Sorts to the Catalogue of thoſe raiſed in *England*; but as I ſuppoſe every one would rather propagate a few good Sorts that bear well, and follow one another in right Seaſon, than crowd his Garden with uſeleſs and unprofitable

Trees, I may therefore be excuſed inſerting a tedious Liſt of their Names, and give the deſired Satisfaction to my Reader, if I mention only thoſe Kinds that may bring him Profit and Pleaſure, and thoſe I ſhall ſet down, as near as I can remember, in the Order they ripen. The firſt ripe is the little *Muſcat*, and then I would recommend the *Katherine-Pear*, which is indeed a common Fruit, but is nevertheleſs of an agreeable Flavour. The *Windſor-Pear* likewiſe is, in my Eſteem, tho' it is an *Engliſh* Fruit, worth our propagating. About the ſame time are ripe the *Queſſe-Madam*, *Summer Bon-Chretien*, and *Summer-Bergamot*, and indifferently good, but eſpecially the latter: Then the *Orange-Bergamot*, and the firſt *Buree-du-roy*, exceeding good; and after theſe the *Lemon-Pear*, *Bergamot*, *Grey-Bury*, *Verte-Longue*, *Green Sugar-Pear*, *Meſſire-Jean*, and *Cryſan*: Then ripens the *Winter Thorn-Pears*, *Virgulues*, *Leſchaſſaries*, ſome of which laſt continue Part of *December*, in which Month the *S. Germain* and *Martinſec Pears* are alſo ripe, and will hold good all the *January* following, till the *Winter Bon-Chretiens* ſupply their Place; all theſe are Eating Pears. And for the Baking Kinds that are the beſt I know of, they are the *Wardens*, *Black Pear of Worceſter*, and *Spaniſh Bon-Chretien*; theſe, if they have time enough to ſtand in the Oven, will bake extremely tender, and very red; but particularly will be of a moſt beautiful Colour, if they are baked in Tin or Pewter Veſſels cloſe cover'd, as has been often experienced; but indeed, 'tis no wonder if by theſe Means they are better colour'd than thoſe that are baked in Earthen Ware, if we conſider that 'tis a Solution of Tin Ore that makes the ſo much admired

* *Bow-Dye*: And I doubt not, but if ſuch as dye Scarlet made uſe of Tin or Pewter Veſſels, rather than Copper, it might ſave them ſomewhat in the Expence of *Cochineal*, or ſuch other chargeable Ingredients. *Pears* are either grafted in *March*, or inoculated towards the latter end of *June*; and two Sorts of Stocks are made uſe of for thoſe Purpoſes, Wildings, and Kernel-Stocks; and oftentimes ſuch as are taken from about the Roots of old Trees, and planted in Nurſeries, are good for *Standard-Pears*, becauſe they put the Graft or Bud forward, and tend to make large Trees; but *Quince-Stocks* are much better for ſuch *Pears* as are deſign'd for Dwarfs, low Walls, or *Eſpaliers*, becauſe they confine the Growth of the Graft or Bud, and produce Fruit quickly, and near the Ground.

The Soil which the *Pear* chiefly delights in is a moiſt Earth, inclining to Clay; nay, I have ſeen this kind of Tree proſper extremely in the ſtrongeſt Sort of blue Clay, which is accounted the worſt of Soils; ſo that this Sort, no more than the Apple-Tree, delights in what we call rich Earth. If indeed one of this ſort of Trees ſeems to decay, encourage it at the Root with Carrion, or the Blood of ſome Animal, for that has a wonderful Effect upon all kind of Fruit-Trees; and I believe would have the like upon every ſort of Vegetable, as we have experienced Shavings of Horns, Scrips of Leather, Wool, or the Entrails of Fowl, or ſuch-like Parts of Animals, will have upon thoſe Plants whoſe Roots they are laid to. It ſeems therefore as if the Animal and Vegetable were made for the Support and Food of each other; the Plants to nouriſh the living Animals, and the dead Animals to feed the Vegetables.

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* *A little Village, within four Miles of* London, *famous for its Water.*

In the Pruning of *Pear-Trees*, the ſame Method ought to be obſerved as for *Apples*; they delight not in a Knife, and eſpecially thoſe grafted upon *Quince-Stocks.* Upon the cutting off any large Branch, (if it happen to be neceſſary) cover the Wound with a Mixture of Tar, Rozin and Pitch, immediately after the Amputation, which will prevent ill Diſtempers which the Wound would otherwiſe be apt to bring upon the Tree.

I am no Admirer of *Dwarf Pear-Trees* in a Garden, becauſe their Figure is commonly too much ſtudy'd, and confin'd, to afford us a good quantity of Fruit; for it is almoſt impoſſible to have both together in Perfection; and beſides, they take up too much room. I remember a fine Seat near *London*, where, about ſix Years ago, the Gardens abounded with *Dwarf Pear-Trees*; which, although they were planted with tolerable good Skill, never produced any quantity of Fruit: Till at length I had them laid into *Eſpaliers*, and have bore Fruit every Summer ſince in great plenty; and I believe there was not gain'd to the Garden leſs than half an Acre of Ground, by that Diſpoſition of them.

Let ſuch *Pears* as are planted againſt Walls be well ſecured from the *Eaſt*; for although the Fruit in its kind be good and hardy, the Eaſtern Blaſts of the Spring coming upon it, thickens the Rind, and fills the Fruit full of Knots as hard as Stone.

The *Eſpaliers* for *Apples* and *Pears* ſhould be about ſix Foot high, that there may be room enough for the Fruit-bearing Branches to be laid into them. And we ought likewiſe to obſerve, that the *Summer Pears*, i. e. ſuch as have their Fruits ripen upon the Trees, are the moſt proper for *Eſpaliers*, becauſe they are more ſubject to bear near the Root, which the *Winter Fruits* ſeldom or never do; ſo that it would be to little purpoſe to plant the *Bon-Chretien*, and ſuch-like laſting Fruits, in Hedges, or againſt Walls that are not at leaſt ten or twelve Foot high.

There is a Method, which has been experienced by ſome of my Friends, to tranſplant large Trees of Orchard Fruit. One of my Acquaintance had an Orchard of *Apple* and *Pear Trees*, that had ſtood about twenty Years; the Trees were in good health, and bore Fruit plentifully: He had occaſion to remove to another Eſtate, about a Mile from this *Orchard*, and reſolved to attempt the Removal of his Fruit-Trees with him: For which end he open'd Trenches about the Roots in *November*, and at the ſame time made preparation to receive them into his new Garden, by making Holes big enough to admit of the Clods of Earth he deſigned to tranſport with each Tree. Soon after, the Froſts began to be violent enough for his Purpoſe, and ſo harden'd the Earth about the Roots, that with Leavers he rais'd his Trees out of the Ground, without breaking any of the Earth from them, and convey'd them upon Sledges to their ſeveral Stations in his new Garden, where they remained in the State they were brought, without cloſing any freſh Mold to their Roots till it began to thaw; and then he finiſh'd his Work by filling up the Trenches, and treading down the new Earth very cloſe.

About a Month after they were thus fix'd, he diſcreetly pruned off about one Third of their

Boughs, as near as he could gueſs, to anſwer the Quantity of Roots they had loſt, and the following Summer had a good Parcel of Fruit upon them. No leſs uſeful than this Method would be the Removal of young Trees at *Midſummer*; which will ſucceed very well, as I have experienced. As I conceive the Sap of every Tree to be at reſt about *Midſummer*, their Tranſplantation may then be perform'd with as much Reaſon, as the Removal of them at the common Seaſons uſed for that Work; for they have then more time to ſtrengthen themſelves, and form their Roots before *Winter*, than thoſe planted at *Autumn*, and will undoubtedly be better prepared to make ſtrong Shoots than any Trees that are planted in the *Spring*. Thoſe Trees that ſhed their Leaves, will fare as well by this Method, as *Ever-Greens*, if their Roots do not dry.

I ſhall now conclude this Section with acquainting my Reader, that ſuch Fruit as does not ripen upon the Trees, ſhould not be gather'd till *Michaelmas*; and then only in dry Weather, if poſſible, without bruiſing, and laid ſingly upon Shelves cover'd with dry Moſs, if it can be got; or for want of it, upon Wheat-Straw, giving it Air by opening the Windows of the *Fruitery*, (or Room it is laid in) till the Froſts begin. Some choice *Pears*, which ripen late in the Year, may be yet preſerved by hanging them up by the Stalks to the Ceiling of the Room; and I have known ſome curious Perſons wrap them in Paper, and hang them up till they are fit to eat.

## SECT. III.

### *Of the* MEDLAR, *and* QUINCE-TREE.

THE *Medlar*, contrary to all other Fruits, is not fit to eat till it is rotten or decay'd; and as it is then agreeable to ſome Palates, I ſhall therefore give the Culture of it. It delights in loamy, wet Soil, and requires little Sun. It is propagated by grafting it upon the *Hawthorn* in *March*, and is only fit for Standards, in the moſt remote Parts of the Garden.

The *Quince* is raiſed either from Layers, Cuttings, or Suckers taken from the Root: It is a natural Fruit, which does not require grafting, and comes early to bear: The young Twigs may be laid into the Earth, in *February*; or the Cuttings, planted in *October* or *November*, ſtrike root without difficulty. This Plant loves a moiſt Soil, and Shade; and the Fruit, in my Opinion, exceeds all others for baking.

## CHAP. III.

### *Obſervations and Experiments relating to the Propagating and Culture of* Stone-Fruit-Trees.

THE Fruits which may be comprehended under the Title of *Stone-Fruits*, are *Peaches*, *Nectarines*, *Apricots*, *Plums*, *Cherries*, and *Almonds*; all which (the *Cherries* excepted) are ſo nearly ally'd, as to make, as it were, one Family. What Directions I ſhall lay down for their Management, will rather be in general than in particular, ſeeing how impoſſible it is to know every particular Soil, or the Diſpoſition of every different Tree; which, if they were known, would require as many various ways of ordering. Monſieur *de la Quintinye* has indeed given us a very elaborate Piece relating to *Fruit-Trees*, endeavouring to aſcertain the Method of pruning them: But how ſeldom do we meet with any Trees juſt in the ſame State of thoſe he mentions? and if by chance we do happen to find ſuch, how difficult is it to comprehend rightly his Meaning? I cannot therefore avoid giving all due Commendations to the ingenious Mr. *Laurence*, who is the firſt I know of that has reduced thoſe Difficulties in the ordering of Fruit-Trees to plain Reaſon, and has given us ſuch uſeful Experiments, whoſe Conſequences may beſt lead us to the right way of Practice in this Point. To proceed then upon the Foot of Reaſon and Experience, as far as my Capacity will permit, I ſhall begin with ſome Obſervations upon the Nurſery, whoſe Soil ſhould be inclining to Loam, a medium Soil between Sand and Clay, and not any ways enrich'd with Dung; for if the Nurſery be richer than the Garden, the Trees never thrive when they are tranſplanted; therefore always contrive to plant them from bad into good Ground. About *September*, make your Plantations of Suckers taken from the Roots of the *Muſcle-Plum*, the *White Pear-Plum*, or the *Black Damaſk*; which are good to inoculate *Peaches* upon, but muſt not be budded till *July*, in the ſecond Year after they have been planted in the Nurſery. I have obſerved, that *Peaches* proſper well that are budded upon *Almond-Trees* raiſed from the Stones. *Almonds* are to be put in the Ground as ſoon as they are ripe, and in one Year's Growth may beſt be inoculated, for they are too apt to Gum when they are older.

*Nectarines* and *Apricots* may likewiſe be budded upon any one of the *Plum-Stocks* I have mentioned taken from thence, and will proſper much better than if they were inoculated upon the beſt Sorts of *Plums*.

The Stones of *Black Cherries* ſhould be ſet or ſown in *Autumn*, to raiſe Stocks to graft all other Cherries upon: They ſhould be planted out the ſecond Year after they are come up, in Lines about two Foot a-part; and the like Diſtance ſhould be preſerved between all other Stocks that are deſign'd to graft on.

*Cherries* proſper beſt if they are grafted; which is contrary to *Peaches* and *Nectarines*, that will rarely be made to thrive, but by Inoculation: All theſe are ſubject to *Gum*, which *Kernel-Fruit-Trees* are not; but the *Peach-Trees* and *Apricots* ſuffer the moſt by it, and often loſe whole Arms by a Canker that always attends the *Gum*, which comes commonly by unſkilful Pruning, but more eſpecially by cutting into the Wood at the *Midſummer* Pruning; therefore, at that Seaſon, take off as few Shoots as poſſible near the old Wood, but nail up ſlightly as many as can conveniently be laid to the Wall, to be more regularly diſpoſed the *February* following, which is the beſt Seaſon for the capital Pruning of *Stone-Fruit-Trees*; then may every bearing Shoot be topp'd or cut, to leave about ſix or eight Inches, according as they are ſtrong or weak, and all croſs-growing Branches, dead Wood, and the Shoots of two or three Years old, muſt then be entirely cut out; for it is a certain Rule, that all *Stone-Fruit-Trees* only bear Fruit upon the Shoots of one Year old; which may be diſtinguiſhed from barren Shoots, by being ſmaller, and better ſupply'd with Buds. I would adviſe, that a Mixture of *Tar*, *Pitch*, and *Bees-wax* be laid upon any capital Wound, or elſe that it be burnt with a hot Iron to prevent *Gum* iſſuing from it.

I account Liſt of Cloth to be much better for the nailing of theſe Trees than Leather, which is apt to ſhrink by Change of Weather, and bind too much the Shoots which are encompaſs'd by it: It is by ſuch Bindings, that oftentimes good Branches are wounded, and by that means periſh; and therefore it is good to let them have room enough allow'd for them to ſwell, without any Preſſure upon them. In *Holland*, and ſome Part of *Flanders*, they have Frames of Wood in the manner of *Eſpaliers*, ſet againſt their Walls, about four Inches diſtant from them; and the Reaſons the Gardeners there give for ſo doing, is not (I think) unworthy our Regard. In the firſt place, they ſay, that their Trees being four Inches diſtant from the Wall, the Fruit is not apt to be deſtroy'd or ſpoil'd by Vermin, nor bruiſed or grow misſhapen: They ſay farther, that the Wall reflects a Warmth to that Side of the Fruit growing next to it, which has the ſame Effect as to the ripening of it, as if the Sun was to ſhine on both Sides of their Fruit, and ſo prevents that unequal Reliſh which is found oftentimes in one ſingle Fruit, which grew cloſe to a Wall. To which they add, that in this Method, the Trees need not be planted ſo cloſe to Walls, as to want a ſufficient Quantity of Earth on every Side of their Roots, which thoſe commonly planted in the ordinary way, muſt do on that Side next to the Wall; and alſo that the Twigs of the Trees being tied with *Baſt*, ſaves the Expence of *Nails* and *Shreads*, and will not be ſubject to canker by too ſtreight binding. And if I may add one Reaſon more towards the recommending theſe *Wall-Eſpaliers*, (if I may ſo call them) it ſhould be, that thoſe Poles, which run horizontally, may be ſo contrived, as to ſerve for Shelter to the *Bloſſoms* and young *Fruit* from thoſe *perpendicular Froſts*, which oftentimes are ſo injurious; as the curious Mr. *Laurence* judiciouſly obſerves.

I have mention'd, among other Obſervations in the Chapter of *Kernel-Fruits*, that the Eaſterly Winds commonly are apt, when they blow directly upon *Pear-Trees*, to ſpoil the Fruit, by filling it with ſtony Subſtances; and no leſs prejudicial are they to the Bloſſom of every forward-blowing Tree, if it lie in the way; therefore I cannot recommend the Planting of *Apricots* in ſuch Places, where the Eaſt Winds may blow upon them; for I obſerve, that in *March* thoſe Winds are always moſt frequent; and if they happen to come without

out Wet, they are infallibly attended with Blaſts; as I ſhall endeavour to explain in another Place. I find that *Apricots* planted againſt a Weſt Wall, where they are ſhelter'd from theſe murdering Winds of the Spring, ſeldom fail to produce good ſtore of Fruit; while, on the other hand, all others in different Expoſures often fail of Fruit, unleſs they have been guarded by artificial Shelters, ſuch as I have ſeen in the Right Honourable Earl *Parker*'s Gardens, (I think) contrived by his Lordſhip; they are Matraſſes of Straw, fix'd in Frames of Wood about four Foot wide, and ſeven or eight Foot high, which are made to remove at pleaſure; ſo that they may always be ſo placed, as to interpoſe between the Wind and the Tree, without ſtifling the Bloſſoms, or breaking them off, as Mats commonly do.

In the Grafting or Budding of *Stone-Fruit*, I have obſerved, that ſuch Trees as are inoculated near the Root of the Stock, are much more apt to ſhoot out uprofitable, luxuriant Branches, than thoſe that are budded or grafted five or ſix Foot from the Root. I find the latter to make Fruit-branches in ſuch plenty, that hardly any barren Shoots are found upon them; which ſeems to happen for the ſame Reaſon I have mentioned elſewhere, that too great plenty of Nouriſhment is ever a hindrance to the bringing forth of Increaſe, as well in *Animals* as in *Vegetables*; and that a Luxuriance of Growth in either, muſt always be check'd to make them prolifick; ſo the Length of Paſſage in theſe Standards, which the Sap takes in its Aſcenſion from the Root, thro' the *Plum-Stock*, before it reaches that Part where it is to alter its Property, in the Bud of the *Peach*, muſt, I think, contribute to weaken it, and rob it of that Luxuriance which it would have had, if it had been permitted to puſh out Branches near the Root, where undoubtedly it was more ſtrong and vigorous.

The ſeveral Kinds of *Stone-Fruit* may have different Situations and Expoſures; *Peaches*, for example, and *Nectarines*, with ſome forward *Cherries*, ſuch as the ſmall *May Cherry*, and the *May Duke*, with a forward *Plum* or two, ſhould have a South Wall; and if the Wall happens to be very high, I would adviſe it to be planted double, (*i. e.*) with Dwarfs and Standards, that it may the ſooner be cover'd.

*Apricots*, ſome choice *Pears*, and a few *Peaches*, may be the Furniture of a Weſt Wall; and ſome forward *Grapes*, (for they bloſſom when Blights are commonly paſt) with ſome *Plums* and *Duke Cherries*, againſt an Eaſt Wall; and to the North Aſpect we may ſet *Plums*, ſome *Winter Pears*, *Carnation* and *Morella Cherries*, with ſome *Golden Pippins*.

*Plums* will alſo do well in Standards; and all Sorts of *Cherries*, excepting the ſmall *May*, and the *May Duke Cherries*, proſper beſt when they have liberty. *Almonds* likewiſe will bear very well in the open Ground; and the *Bruſſels Apricot*, whoſe Fruit is ſo excellent, will bear plentifully without the help of a Wall.

The *Peaches*, which I moſt covet, are the *Nutmeg Peaches*, for the ſake of their early ripening; the *Common Minion*, *Milet's Minion*, *St. Laurence*, the *White Magdalen*, the *Old Newington*, *Belgard*, the *Admirable*, and the *Katherine Peach*, which comes late, and is a certain Bearer. Of *Nectarines*, Mr. *Whitmill's Early Nectarine*, the *Red-Roman*, and *Orange-Tawny Nectarine*. *Apricots*, the *Maſculine Apricot*, the *Orange*, and the *Turky Apricots*, for Walls; and for the Standards, the *True Bruſſels*.

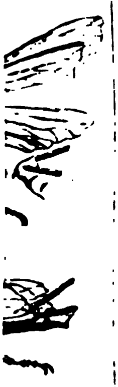


Fig. I

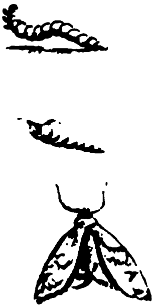


Fig. II.

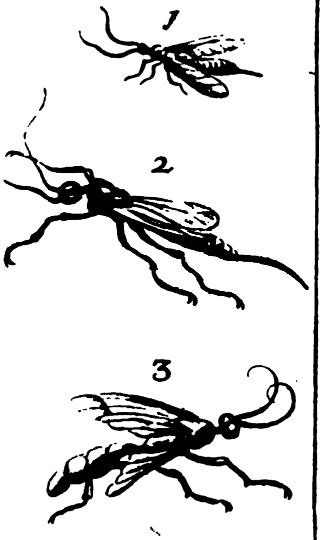


Plate 6 Pag. 210 pt. 3d.

*Bruſſels.* *Plums*, the *Morocco*, *Imperial*, *Orleans*, *Muſcle*, the two *Pedrigons*, *Queen Mother*, *Green Gage*, *Violet*, *Apricot*, *Damaſcene*, *Cloth of Gold*, or *Drap d'Or*, *Royal*, *Bonum Magnum*, and the *White Pear Plum*; to which we might alſo add the *Damſin*, which, in my Opinion, is not without its good Qualities.

*Cherries*, the *Early*, or *May Cherry*, the *May Duke*, the *Black-Red*, and *White Heart Cherries*, the *Carnation*, the *Morella*, the *Flemiſh Cherry*, and the *Common Black*; and alſo the *Cluſter Cherry*, well enough deſerves a Place in our Gardens for the Curioſity of its Fruit.

There have been ſeveral Ways practiſed to forward the Ripening of Fruit. The late Marquis of *Wharton* had a Glaſs-caſe made on purpoſe for that end; and by the help of Fire againſt the Back of the Wall the Trees were nail'd to, and under the Roots of the Trees, had ſeveral Kinds of Fruits very early. But of all the Inventions that I have yet ſeen or heard of, the Contrivance of the ingenious Mr. *John Millet*, Nurſery-Man at *North-End* near *Fulham*, is to be preferr'd. I have ſeen in his Garden ripe *Cherries* in *February*; and *Apricots*, *Roſes*, and *Junquils*, above three Months before their natural Seaſon; and thoſe not in ſmall quantities, but in as great abundance as if they had been the Product of Nature alone: And this he does with the aſſiſtance of Horſe-dung, judging it to yield a more gentle ſweating Heat than Fire, and is therefore more natural to Plants.

## CHAP. IV.

## *Of the* GOOSBERRY, CURRANT, STRAWBERRY, RASBERRY, BARBERRY, *and* FILBERD.

ALTHO' the Fruits which I deſign to treat of in this Chapter, are ſo commonly known, that there is hardly any Garden without them; yet I am apt to believe, the right Method of raiſing them and ordering them is not every where underſtood.

Of the *Gooſberry* we have the following Kinds, which are chiefly worth our Notice, *viz.* the large *White Dutch Gooſberry*, which produces an excellent Fruit for eating; the large *Amber Gooſberry*, which I think is better for baking while it is green, than to be kept till it is ripe; the *Walnut Gooſberry*, which exceeds all others for the Largeneſs of its Fruit, which may be gather'd for baking ſooner than any other; and the *Champain Gooſberry*, which is ripe at leaſt a Fortnight before any of the reſt; and beſides theſe, the *Black Hairy Gooſberry* is pleaſant enough. If I ſhould here enumerate all the other Sorts I have ſeen, it would be to little purpoſe, ſeeing every Year is likely to produce new Varieties from Seeds; and the Rules for the Culture of any one Sort will ſuffice for the reſt that are, or can be raiſed.

This kind of Shrub may be propagated either by Seeds, Suckers, or Cuttings; the firſt may be ſown as ſoon as they are ripe, and will come up the Spring following: The Suckers ſhould be taken from about the Roots of old Trees, when their Leaves are fallen, in open Weather, and tranſplanted in Nurſeries; and the Cuttings likewiſe will take root, if they are planted in *September* or *October*. Theſe Plants require a ſtrong, holding Soil, and may be tranſplanted in *October* with more Safety than in the Spring.

We have three Sorts of *Currants* very different from each other, *viz.* the large *White Dutch Currant*, the *Dutch Red Currant*, and the *Black Currant:* The firſt is an admirable Bearer, and will ſometimes produce Fruit as big as ſome Sort of *Grapes*, but I think are not ſo pleaſant to the Taſte as the *Red Currants.* The Kind which bears the Black Fruit, for Variety ſake, as well as on account of its great Virtue in Medicine, ſhould not be wanting in a Garden, tho' ſcarce one in twenty can like its Flavour. Theſe may be propagated like the *Gooſberry*, and delight in the ſame kind of Soil. I have known a curious Man, when the Fruit has been juſt ripe, tie up ſome of the *Red Currant* Buſhes in Mats, to preſerve the Fruit upon them till *Auguſt* or *September*, and ſometimes later in the Year; and it is practiſed by ſome to plant them againſt Walls, to make the Fruit come larger; but I have never found 'em half ſo ſweet as the Standards.

Both the *Gooſberry* and *Currant* ought to be kept free from old Wood, never leaving on the Plants any Shoots (if poſſible) that exceed three Years Growth; for the largeſt Fruit is always found upon the youngeſt Branches: Theſe Fruits are ripe in *July*.

We have four Sorts of *Strawberries*; the *Scarlet*, the *Hautboy*, or *Great White Strawberry*, and the

*Wood Strawberry*, both *Red* and *White*. The firſt is ripe much ſooner than either of the other, eſpecially if it has had the Benefit of a good Expoſure, and a light Soil, which always contributes to quicken Vegetation; however, *Strawberries* delight not in any Ground ſo much as that which inclines to Clay: 'Tis in ſuch Land we can only expect their Fruit to be large, and in abundance; witneſs the great Profits which the Gardeners about *Hammerſmith* (where the Soil is proper for making of Bricks) draw yearly from their Plantations of this Sort of Fruit.

The *Great White Strawberry* ripens next after the *Scarlet*; and laſt of all, the *Wood Strawberries*, which continue a long while, but chiefly if they be kept ſhaded after they begin to ripen.

As I know no Place where *Strawberries* are ſo generally propagated, as about *Hammerſmith*, ſo I ſhall preſcribe the ſame Rules for their Management, as are commonly practiſed by the Gardeners of that Place.

They provide a Parcel of Horſe-dung and Coal-aſhes, well mix'd and incorporated together, and lay on a ſufficient Quantity of it upon their Land, to be dug or trench'd in *February*; then they lay up their Borders three Foot wide, and thereon plant the Slips of whatever Kind they ſee convenient, at about eight Inches apart; after which they ſet *Beans* for a Crop that Summer; for the *Strawberry Plants* will not begin to bear Fruit to any purpoſe till the Year following, and even then, not comparable to what they will produce the Year afterward, which is the third Year after planting; 'tis then they have full Crop, if extraordinary Drought does not hinder. But I ſhould have alſo added, that after the laying up of the Beds, that at every five or ſix Foot diſtance, they plant *Roſes*, *Gooſberries*, *Currants*, or *Sweet-Briar*; which turn to good account at the Markets, beſides the Advantage of the Shade thoſe Plants give the *Strawberries*.

From a Piece of Ground thus planted, it is hardly to be imagined what Advantage ariſes to the Gardeners, if they are diligent to keep their Crop weeded, and well water'd, if the Seaſon of their Bloſſom be dry.

Early in the Spring they clean them, and fling Earth among them to ſtrengthen their Roots; and that the Ground may not lie too long idle, they plant *Savoys* and *Cabbages* in the Allies for the Winter. A Piece of *Scarlet Strawberries*, ſo order'd, will remain tolerably good for about five or ſix Years; but the *Hautboy* and *Wood* Kinds ſhould be renew'd once in three Years, always minding to get the *Wood-Strawberries* freſh from the *Woods*, and not make uſe of Slips from the Garden, for thoſe degenerate.

But there yet remain many Particulars relating to *Strawberries*, which are not practiſed by theſe Gardeners; as the Stringing them, or Pulling off their Runners, in *July*, where the Roots are weak eſpecially, ſo as to leave all the Plants ſingle; which is practiſed by ſome to make the Fruit large.

Again, to make them bear Fruit in the *Autumn*, cut down the Leaves and Flower-ſtems juſt before the Bloſſoms open, and they will ſhoot out freſh, and bear ripe Fruit about *September*; as I have experienced.

Now, if it is deſired to have ripe *Strawberries* in *March*, it may be done by planting ſome ſtrong Roots in Pots, and putting them on a gentle Hotbed in *January*, giving them what Air may be convenient till they bloſſom, and moderate Waterings at that time, with Water a little warm'd. By theſe Inſtructions, and the Care of an ingenious Gardener, who will rightly defend them from Froſts, or too ſharp Winds, we may have them produce Fruit as I propoſe. I cannot conclude the Culture of this Plant without mentioning, that I have made Plantations of them in *April* and *May*, with good Succeſs; and the Second *June* afterwards I have gather'd very good Fruit from them.

The *Raſberry* is the next to be conſider'd: We have two Sorts of them, the *Red* and the *White*; the latter is the greater Rarity, but, in my Opinion, it is not of ſo good a Flavour as the *Red*. Theſe delight in ſuch Soil as agrees beſt with *Strawberries*, and are propagated by Slips taken from the Roots in *March*, for that is the beſt Seaſon to plant them in. Some Gardeners plant ſingle Lines of them, leaving the Diſtance of about a Foot between the Plants; others make Beds for them, of three Foot wide, and plant three Rows in a Bed; both which Ways I find to ſucceed very well. The firſt *Summer* after planting they will fling up ſome Suckers from the Roots, and put out ſome few Shoots from the old Stems that were left remaining when they were planted; but as thoſe Stems are never left above a Foot long when we plant them out, we cannot expect any Quantity of Fruit from them the firſt Year, nor indeed any vigorous Shoots from the Roots till the ſecond Year; ſo that it will be the third *Summer* after planting, before we muſt expect a full Crop, for the Fruit is always found upon the Shoots of the preceding Year. The chief Culture neceſſary for this kind of Plant, is to keep them clean from Weeds in the *Spring*, and prune the Tops of the ſtrongeſt Shoots of the laſt Year, to leave them about three Foot high; and that Work muſt be done in *March*; as alſo to cut away all dead and weak Branches. The *Raſberry* ripens in the Beginning of *July*, and laſts till the End of the Month.

The *Barberry* is a pleaſant Shrub, bearing beautiful Branches of yellow Flowers in the *Spring*, and no leſs delightful Cluſters of red Berries towards the *Autumn*. The Fruit is of a ſharp Taſte when it is ripe, and ſeldom uſed any other way than in Sauces. I have been told, that the Leaves of the *Barberry*, when they are young and tender, may be dry'd to imitate the *Indian* Tea which they call *Bobea*; and indeed the Figure of the *Barberry* Leaf is not unlike it. If any one of my Readers ſhall think it worth his while to make a trial, he may do it after the following manner: Lay the Leaves freſh gather'd upon a Sieve placed over a Veſſel of boiling Water till the Steam has ſoften'd them, then ſpread them upon a Copper-plate over a gentle Fire, and move them to and fro till they roll up; which is the Method they uſe for drying their Tea in *China*, as I have heard: But I would adviſe ſuch as intend to make the Experiment, not to be over haſty in drinking the Infuſion of ſuch Leaves, before ſome ſkilful Phyſician has firſt given his Advice. There are two Kinds of this Fruit; one without Seeds, and the other with Seeds: The firſt is ſo rare, that I have yet only ſeen it grow in the Gardens of my worthy Friend *Samuel Reynardſon* Eſq; at *Hillingdon*, among his numerous Collection of curious Plants; but the other is found frequent enough in moſt Gardens. The Plant loves a loamy Soil, and is increaſed eaſily by Suckers from the Root, or Layers in the Beginning of *March*.

The *Filberd* is order'd like the *Hazel*, mention'd in the Firſt Part of this Treatiſe; but is allow'd place in our Gardens on account of its thin Shell, which is the only Excellency it has more than the common *Hazel*, in my Opinion. This and the *Barberry* ſhould be planted in the moſt remote Parts of the *Kitchen-Garden*.

*N. B.* The *Filberd* may be grafted upon the *Hazel*, and will bear very well.

## CHAP. V.

## *Of BLIGHTS.*

AS a *Blight* is the moſt common and dangerous Diſtemper that *Plants* are ſubject to, ſo I ſhall endeavour to explain by what means *Vegetables* are affected by it; and if I ſhall be ſo happy, from the Obſervations I have made, to diſcover the Cauſe of it, the Remedy may then be more eaſily found out, and the Gardener will with more certainty hope for Succeſs from his Care and Labour.

I ſhall be the more particular in diſcourſing upon this Subject, as it will afford me an Opportunity of opening to the View of my Reader a wonderful Scene of Nature, which hitherto has been ſlightly touch'd upon by Writers, or overlook'd or deſpiſed by unthinking Men; and ſhall endeavour from the whole to draw ſuch Conſequences as may be both profitable and delightful.

*Plants* of all degrees are ſubject to *Blights*, which are ſo variouſly communicated to them, that ſometimes a whole Tree will periſh by that Diſtemper; now and then a few Leaves or Bloſſoms only, and perhaps a Branch or two will be ſhrivell'd vell'd or ſcorch'd by it, and the reſt remain green and flouriſhing. I have yet never obſerv'd this Diſeaſe to happen among *Plants*, but upon the blowing of ſharp and clear *Eaſterly Winds*, which are moſt frequent in *England* about *March*; but ſometimes happen in other Months. It is very obſervable, that the *Caterpillars* generally attend theſe Winds, chiefly infecting ſome one ſort of Tree more than another, and even then not every where upon the kind of Tree they attack, but ſome particular Branches only: From which Obſervations I think we may draw the following Inferences, either that the Eggs of thoſe *Inſects* are brought to us by the *Eaſterly Winds*, or that the Temperature of the Air, when the *Eaſterly Winds* blow, is neceſſary to hatch thoſe Creatures, ſuppoſing their Eggs were already laid upon thoſe infected Parts of the Trees the preceding Year.

The *Blights* which are attended with large *Worms* or *Caterpillars*, ſeem to be rather hatch'd with the *Eaſt Wind*, than that the Eggs of thoſe Creatures are brought along with it; but thoſe *Blights* which produce only thoſe ſmall *Inſects* which occaſion the Curling of the Leaves of Trees, may proceed from the Swarms of them, either hatch'd, or in the Egg, which are brought with the Wind.

Some perhaps may object, that the *Eaſt Wind* is too cold to hatch theſe Creatures: How comes it then, that we find them hatch'd when thoſe Winds reign'd? Or is it reaſonable to conjecture, that the ſame Degree of Heat is neceſſary to enliven an *Inſect*, as is required to hatch the Egg of a Pullet? The *Inſects* of *Norway*, *Iceland*, and ſuch-like cold Climes, muſt certainly have leſs Heat to produce them, than Creatures of the ſame Race muſt neceſſarily have in thoſe Climates which lie nearer to the Sun. Every Creature without doubt requires a different Period of Heat and Cold to enliven it, and put it in motion; which is proved by ſo many known Inſtances, that I conceive there is no room for any Diſpute upon that ſcore.

But there may yet be another Queſtion, *viz.* Whether it is not the *Eaſt Wind* of itſelf that blights without the help of *Inſects?* But that may be eaſily reſolved on my ſide; for that if it was the Wind alone that blighted, then every *Plant* in its way muſt unavoidably be infected with its Poiſon; whereas we find the contrary, only a ſingle Branch, it may be, or ſome other diſtinct Parts of *Plants.*

And again, to ſhew how reaſonably we may conjecture that 'tis *Inſects* which thus infect the Trees, let us only conſider that every *Inſect* has its proper *Plant*, or Tribe of *Plants*, which it naturally requires for its Nouriſhment, and will feed upon no other Kind whatſoever: Therefore it is no wonder to ſee one particular ſort of Tree blighted, when all others eſcape; as for example, that Wind which brings or hatches the *Caterpillars* upon the *Apple-trees*, will not any way infect the *Pear*, *Plum*, or *Cherry*, with *Blights*; becauſe, were the Shoals of *Inſects* natural to the *Apple*, to light only upon thoſe other Trees mention'd, they would then want their proper Matrix to hatch in; or if they were hatch'd already, they would periſh for want of their natural Food: So that it is morally impoſſible that all Sorts of Trees ſhould be blighted at the ſame time, unleſs the Eggs of every Kind of *Inſect* natural to each Tree, could be brought at one time with the Wind, or that an *Eaſterly Wind* could contain in it at once as many differing

Periods of Cold or Heat, as would be required to hatch and maintain each differing kind of thoſe Creatures.

The common People in the Country ſeem to be of my Opinion, that *Blights* are brought by the *Eaſt Winds*; which they are ſo well ſatisfied brings or hatches the *Caterpillar*, that to prevent the too great Progreſs of *Blights*, it is common for them, where the *Eaſt Winds* blow, to provide large Heaps of Weeds, Chaff, and other combuſtible Matter on the Wind-ſide of their Orchards, and ſet them on fire, that the Smoke may poiſon either the *Inſects* or their Eggs as they are paſs'd along. By this Contrivance I have often known large *Orchards* preſerv'd, when the neighbouring Parts have ſuffer'd to the Loſs of all their Fruit.

And I have alſo ſeen theſe Fires made with good Succeſs to deſtroy the *Caterpillars*, even after they were hatch'd, and had begun to devour the Trees, by ſuffocating them, and forcing them to drop to the Ground, where they have been ſwept up in large quantities and kill'd. I have heard it affirm'd by a Gentleman of Reputation, that *Pepper-duſt*, being powder'd upon the Bloſſoms of any Tree, will preſerve them from *Blights*; which may be, becauſe *Pepper* is ſaid to be preſent Death to every Creature but to Mankind. Now, altho' this laſt Secret is too coſtly for common Uſe, yet it may be of ſervice in ſome particular Place for the Trial of a new Tree, where a Taſte of the Fruit is deſired; and beſides it helps to inform us, that *Blights* are occaſion'd by *Inſects* or their Eggs lodging upon a *Plant*, and that *Pepper-duſt* will not ſuffer them either to live or to be hatch'd.

Another Remark (which to me is Demonſtration) that *Blights* proceed from *Inſects* or their Eggs (being brought with the *Eaſterly Winds*) was the total Deſtruction of the *Turneps* ſome Winters ago on the Weſt Side of *London:* About *October* we had dry *Eaſterly Winds* for a Week or ten Days, and ſeveral thouſand Acres of *Turneps* which were then well grown, turn'd yellow, and decay'd, unleſs in ſuch Places only as were ſhelter'd by Hedges, Houſes, or Trees, where they remain'd green till the *Inſects*, which came with the Wind, in about a Week's time deſtroyed thoſe alſo. Some Farmers imagin'd that the Birds, which were there in great Flocks, had eaten the Leaves of their *Turneps*, and contrived all Means poſſible to deſtroy them; till I convinced them that the Birds were rather Friends than Enemies, and came there to feed upon the *Caterpillars*, which were in ſuch great numbers, that each *Turnep-plant* had not leſs than a Thouſand upon it. And that *Inſects* frequently paſs in Clouds and numberleſs Armies after this manner, is plain from ſeveral Inſtances which have happen'd in my Time, and one of them in a late *Summer* (I think in *June*) one of theſe Swarms paſſing over *London* were ſuffocated (I ſuppoſe) with the Smoke of the *Sea-coal*, and dropp'd down in the Streets, inſomuch that a ſquare Court belonging to the *Royal Society* was almoſt cover'd with them. Theſe were of the *Fly-kind*, and fully perfected.

It may be aſk'd, perhaps, how theſe *Inſects* came to deſtroy the *Turneps* only, and not touch the other *Greens* of the *Fields*, as *Cabbages*, *Carrots*, *Parſnips*, and the like? Every Herb has its peculiar *Inſect*, like the Trees I have mention'd: Nay, more than this, the *Inſects* which Nature has deſign'd to prey upon the *Flower* of a *Plant*, will not eat the *Leaves*, or any other Part of the ſame *Plant*. The *Leaves* of *Plants* have their *Inſects* natural to them; the *Bark* and *Wood* likewiſe have their reſpective Devourers; and thoſe ſeveral *Inſects* have other Kinds, which lay their Eggs, and feed upon them.

The Flowers of the *Province-Roſe*, before they are open, produce and nouriſh the *Inſect* in Figure I of the firſt Plate, after the Eggs have been laid upon them. A is the *Nympha* or *Caterpillar* which feeds upon the *Roſe-buds*. B the *Aurelia* of the ſame, which for a time lies as it were in a State of Death, faſten'd with fine ſilken Threads to the Leaves of the *Roſe-tree*, and at length reſuſcitates and comes forth with Wings adorn'd with curious Variegations of Black and Yellow, C, and eats no more. While it lives in this laſt State, it ſeems to be the moſt perfect, by laying then its Eggs upon the Bark of the ſame Tree, (about an hundred in number) after it has coupled with a Male of its own Tribe. This Proceſs from the Egg to the Fly, is by my late curious and learned Friend Mr. *James Petiver*, F.R.S. made an Emblem of the Reſurrection: The *Nympha*, he obſerves, feeds and grows to a certain degree of Perfection, as all Animals do; then for a time is laid up without Motion in a State of Death, and appears at laſt in its utmoſt Perfection, with Wings beautifully adorn'd with pompous Colours, and breathes only the purer Parts of the Air.

The Leaves of *Plants* have alſo their *Inſects*.

The *Silk-worm*, for example, upon the *Mulberry*; the *Common White Butterfly*, upon the *Cabbage* and *Plants* of the ſame Tribe: And the *Bark* and *Wood* of Trees have alſo ſeveral Kinds of *Beetles*, which prey upon them, and are large enough to be diſcern'd without a *Microſcope.* There are yet other Kinds which are naturally diſpoſed to feed upon the Fruit of Trees, ſuch as we often find in *Apples*, *Pears*, and *Nuts*; and the Roots of Trees are alſo the proper Food for *Worms* of a different Race from thoſe already mentioned, ſuch as are long, ſcaly, and have many Feet, by ſome call'd *Canker-worms*, which, by devouring the Roots of Trees, cauſe them to languiſh for a time, and at length die; and the very Pith of *Plants* is not ſafe from Enemies of this ſort: How often are the *Carnations* and other Flowers deſtroy'd by little Worms which eat their Pith?

And all theſe, if I miſtake not, have their *Ichneumon Flies* which feed upon them; and by the help of fine *Tubes* growing about them, convey their Eggs into the Bodies of the *Nymphæ* or *Caterpillars*, where they hatch as ſoon as the *Caterpillars* are laid up in *Aureliæ*, and feed upon them till they are themſelves perfected, and make their way into the World: This I am ſure of in many Caſes, as I have ſeen, when that excellent Lady the late curious Dutcheſs of *Beaufort* diverted herſelf with enquiring into the Nature of *Inſects*, that the *Aureliæ* of ſeveral Months have brought only *Ichneumon Flies* of different Kinds: See *Fig.* II. *Plate* I. N° 1, 2, 3. The firſt is the *Ichneumon Fly*, bred upon the ſmall green *Caterpillar* which feeds upon the red *Sallow*; the ſecond feeds upon that bred upon *Borage*; and the third feeds upon the *Inſect* commonly found upon *Campion* or *Cockle:* And it may be, theſe *Inſects*, which feed upon others, are not without ſome others of leſſer Rank to feed upon them likewiſe, and ſo to Infinity; for that there are Beings ſubſiſting, which are not commonly viſible, may be eaſily demonſtrated, if there is any Truth in a *Microſcope.*

A *Winter* not long ago, during the moſt ſevere cold Weather, a Friend of mine was deſirous to look into my *Microſcope*, and was ſo impatient, that he would not allow me time enough to provide any new Subjects for the *Glaſſes*, but contented himſelf with examining ſome minute Parts of *Plants* which had lain between the ſmall *Glaſſes* for above fourteen Months: Among them he happen'd to pitch upon a ſmall *Hair* of the *Leaf* of the common *Mouſe-Ear*, when on a ſudden he diſcover'd a living Creature of the figure of a *Beetle*, in appearance an Inch in length, walking between the *Glaſſes.* He was much ſurprized to find it ſo perfect in all its Parts, and gave me the *Glaſſes* that I might obſerve it, and delineate it for him; which I did, and by Computation found it to be no more than one thouſand times leſs than the leaſt Duſt of Sand viſible to the naked Eye. I was then willing to try whether the Cold, which was ſeverely felt by us, was not to that minute Creature equal to the Degree of Warmth which hatches other *Inſects* of larger Size; and for that end I held the *Glaſs* about a Yard diſtance from a ſlow Fire, about the tenth Part of a Minute: That trifling Heat to us, was ſo intenſe to it, that in that ſhort ſpace of time it was thereby burnt to death, and ſhrivell'd to a fourth Part of its former Size, and ſcorch'd out of ſhape. This brought to my Mind the *Inſect* Mr. *Ray* mentions, which is hatch'd and dies in a Day; and alſo the ſeveral Periods of Life appointed to the ſeveral viſible Creatures upon Earth: And I could not help reflecting at the ſame time, that as I found by the help of a *Microſcope*, that Quantity was only computed to be great, or little, in proportion to what Objects our Eyes are capable of ſeeing without the help of *Glaſſes*; ſo I alſo imagined that Space was confined to our Underſtanding by the ſame Rule; and that the Life of that Creature which lives only one Day, is of the ſame Lengh or Duration to it, in proportion to itſelf, as the Term of an hundred Years is to Mankind; that is, about three Minutes of that *Inſect*'s Life is equal to a Year with us; and the coldeſt Air of the laſt Winter, to the *Inſects* I ſaw, was equal with the Summer's Warmth to ſuch Animals as then only came abroad: For the Heat which kills this *Inſect*, and was as a violent Fire to it, was hardly warm enough to be diſcern'd by me.

It is wonderful to conſider the Fineneſs of the ſeveral Parts of a Creature even ſo minute as this, (for the *Microſcope* has diſcover'd much ſmaller) how ſmall muſt the Organs of its Senſes be in proportion to its Body! The Eyes, perhaps, a thouſand times leſs, and the other Parts anſwerable to them: May we not then reaſonably conclude, that with ſuch Eyes it is capable of diſcerning other Bodies, which are as minute, and of as diſtant Smallneſs to itſelf, as the ſmalleſt Creature capable of our Sight is to us? For I think it is plain that every Animal, as their Eyes are greater or ſmaller, or of different make, have certain Bounds of Sight, beyond which they cannot ſee without Help, ſuch as the *Microſcope*, *Teleſcope*, &c.

But alas! How trifling an Object was the *Inſect* I have mention'd, in compariſon to thoſe diſcover'd by Mr. *Lewenhoeck*, in a Quantity of *Pepper-water*, no bigger than a Grain of *Millet*, in which he affirms to have ſeen above ten thouſand living Creatures; and ſome of his Friends at the ſame time witneſs to have ſeen thirty thouſand, and others above forty-five thouſand Creatures moving in that ſmall Quantity of Water: Nay, they tell us, that becauſe they would be within compaſs, they only related half the Number that they believ'd they had ſeen.

Now, from the greateſt of the Numbers mention'd, it is inferr'd, that in a full Drop of Water, there will be eight Millions two hundred and eighty thouſand of theſe *Animalcula*; which, if their Smallneſs comes to be compared, a Grain of Sand broken into eight Millions of equal Parts, one of thoſe Parts would not exceed the Bigneſs of one of thoſe *Inſects*.

Theſe Obſervations of Mr. *Lewenhoeck* were not only confirm'd by the famous Mr. *Hook*, but were likewiſe improv'd by him: He tells us, that after he had diſcover'd vaſt multitudes of thoſe *Animalcula* deſcribed by Mr. *Lewenhoeck*, he made uſe of other Lights and Glaſſes, and magnified them to a very conſiderable Bigneſs; and that among them he diſcovered many other Sorts much ſmaller than thoſe he firſt ſaw, ſome of which were ſo very minute, that Millions of Millions of them might be contained in one Drop of Water.

This indeed might exceed the Belief of thoſe who are not converſant with good *Microſcopes*; but I am ſatisfied, whoever once underſtands their Uſe, and makes trial of thoſe made in our own Country by the late Mr. *Mellen*, or thoſe of Mr. *Wilſon* and Mr. *Stirrup*, will not want any Argument to convince them of the Truth of what is here related.

If then it is true, that there are Creatures of that exquiſite Smallneſs here mention'd, and that thoſe Creatures have Life and Motion, as it is evident they have, what muſt we then think of their Muſcles, and other Parts, as Mr. *Hook* obſerves? Certain it is (*ſays he*) that the Mechaniſm by which Nature performs the Muſcular Motion, is exceeding ſmall and curious; and to the Performance of every Muſcular Motion in large *Animals*, there are not fewer diſtinct Parts concern'd, than many Millions of Millions, which are viſible through a *Microſcope*.

Mr. *Lewenhoeck* has lately inform'd us, that upon a nice Examination of the *Ant*, he finds that it is not wanting of any Part which is judged to be neceſſary and conducive to the Life and Motion of the largeſt *Animals*; and he farther adds, that the Filaments or little Threads which compoſe thoſe ſeveral Parts of the *Ant*, are as large as thoſe which do the ſame Office in an *Ox*, or any Creature of the largeſt Size, ſomewhat like *Silk*, which, when it is firſt ſpun by the Worm, is all of one Fineneſs, but may be wove into the broadeſt Sattin, as well as ſerve to compoſe the narroweſt Ribband; the one only taking a larger Quantity of thoſe fine Parts than the other. And indeed, ſo far as I have obſerved, it is the ſame in *Plants*; the *Oak*, the *Gourd*, and the meaneſt *Moſs*, are compoſed of Principles of the ſame Fineneſs.

This Account may ſuffice to ſhew us, that there are Beings ſubſiſting, which are not commonly viſible; and therefore it is eaſy to conceive, that the moſt gentle Air is capable of blowing them from place to place; and, through their extraordinary Lightneſs, it is as readily inferr'd, that they may thus be convey'd by the Winds to us from the moſt remote Quarters of the World; but more eſpecially from the *North-Eaſt* Parts, where the Cold is intenſe enough to give life to theſe ſmall Creatures, and from whence there is not a Sea of a large Extent enough to deſtroy them while they are paſſing over it: For it is my Opinion, that the Vapour which naturally ariſes from the Sea, is much warmer than what generally is evaporated from the Earth, and conſequently inconſiſtent with the Life of thoſe minute Creatures; but chiefly thoſe Vapours which riſe from the main Sea, where the Land, or Freſh-waters are leaſt prevailing: And therefore, were thoſe *Inſects* to be blown to us from the *North-Weſt* Parts of *America*, I ſuppoſe the Length of the Sea they muſt then paſs over, would kill them before they came to us; and perhaps is the reaſon why the Winds from thence are never known to blaſt any of our Trees, and are always much warmer than the *North-Eaſt* Winds, which come over a narrower Sea, which has many Rivers running into it. The *Orange-Tree* in ſuch particular manner delights in the warm Air of the Sea, that in the Inland Parts of *Italy* they will periſh by the Winter's Cold, if they are not houſed; and yet ſeveral Degrees more *Northerly*, where they grow near the Sea, they flouriſh and defy the moſt rigorous Seaſon. It is obſervable, that the main Sea of itſelf never freezeth, (as ſome ſay) not even under the *Poles*; but only in ſuch Places where vaſt Rivers run into it, as in the *Sound*, and in *Hudſon's-Bay*, where it is mix'd with Freſh-water, the Froſt has power over it. It ſeems reaſonable to believe alſo, that the Vapour which ariſeth from the Sea, is deſtructive to *Inſects*; becauſe we find how much the *Salt* taken from the Sea-waters contributes to the Preſervation of Bodies from *Putrefaction*, which, I think, is always attended with *Inſects*: And if the common Salt of the Sea-water is ſo great a Preſervative againſt *Inſects* and *Putrefaction*, I ſee then no reaſon why the Vapour ariſing from the ſame Fund of Water, ſhould not partake of the ſame Virtue.

The Receipt to prevent *Wheat* from being ſmutty (which is a Blight common to Corn) ſeems to confirm what I have ſaid; and I think we cannot enough commend Colonel *Plummer* of *Hertfordſhire*, that ſo frankly communicated it, and ſo generouſly publiſhed it, for the common Good. Happy would it be for the Nation, if every one would ſo generouſly contribute towards its Welfare.

The Receipt teaches us, firſt to waſh the *Wheat* through three or four ſeveral Waters, ſtirring it round each time with a large Stick backwards and forwards with great Force, and with a Skimmer each time take off all the light *Wheat*. When this is done, put your *Wheat* into a Liqour prepared in this manner:

Put into a large Tub, which hath a Tap, a ſufficient Quantity of Water; then put as much Salt into it, as, when 'tis well ſtirr'd about, will make an Egg ſwim; then add as much more Salt as was before, and ſtir it very well; and to this put two or three Pounds of Allom beaten very fine, and ſtir it about.

This you are to uſe as you do your ordinary *Brines*, only you muſt let your *Wheat* ſteep thirty or forty Hours, for leſs ſignifies nothing; tho' the common Opinion is, that ſteeping ſo long kills the *Seed* in the Wheat; but Experience teaches the contrary.

You muſt take your Wheat out the Night before you ſow it, and ſift ſome ſlack'd *Lime* on it, which ſerves only to make it dry enough to ſow. 'Tis neceſſary to add ſome more Water to the *Brine* in a Week or ten Days time, as it waſtes, and Salt proportionable to the Water, and about a Pound of *Allom*.

*Note*, Many Farmers ſteep their Wheat in *Brine*, yet have plenty of ſmutty Wheat; becauſe they don't make their *Brine* ſtrong enough, and take their Wheat out too ſoon.

*Note alſo*, Many Farmers have ſuffer'd greatly by ſmutty Wheat, eſpecially in a dear Year, when ſuch Wheat will not ſell for above five or ſix Shillings a Buſhel; whereas that which is free from *Smut*, will ſell for ten, eleven, or twelve Shillings; and ſuch ſmutty Wheat being eaten chiefly by the poorer People, and being unwholſome, occaſions Sickneſs: Therefore for the Benefit of the Publick this is printed.

From hence we may learn how much Salt contributes to the Deſtruction of *Inſects*, which occaſion the *Smut* upon Corn; and it is not unlikely, that ſuch *Smut*, when it happens to be found upon Corn, may cauſe Sickneſs to ſuch as eat of it: For I am very apt to believe, that the moſt epidemical Diſtempers Mankind is ſubject to, proceed from poiſonous *Inſects*, which are either eaten unregarded, or are ſucked into the Stomach with the Breath; as that worthy Gentleman Mr. *Balle* ſo curiouſly obſerves, in a Letter I have received from him, relating to infectious Diſtempers; which I ſhall annex to this Chapter, as it contains many Obſervations which may help to explain and confirm what I ſhall offer concerning *Blights.*

I have already taken notice, that every diſtinct Part of a *Plant* has its *Inſect* which is naturally diſpoſed to feed upon it, and thoſe all different from one another, as well in Shape as in Colour: It ſeems reaſonable enough alſo, that every *Inſect*, as it has a different kind of Food, is of a different Virtue, perhaps partaking not only of the *Plants* they feed upon, but of the Qualities of each diſtinct Part of thoſe *Plants* which are their Food: For, as I have obſerv'd, that every *Plant* has Channels peculiar to the Conveyance of its ſeveral Juices, ſuch as thoſe minute Pipes in the Wood, which admit only the riſing Vapour from the Root; and thoſe other larger Paſſages between the inner Bark and the Wood, by which that Vapour returns when it is condenſed into a Water. And again, the different Sizes of thoſe Veſſels which make the *Parenchyma* of the ſeveral Barks, and reſpectively receive from the falling Sap ſuch Parts only as they are diſtinctly made to imbibe, not to mention thoſe other Veſſels of different frame in the Leaves, Flowers, and Fruits of *Plants*, which can only admit of ſuch Particles of Sap, as they are all ſeparately appointed to receive: I ſay, from theſe Obſervations it appears that every Part of a *Plant* has then its diſtinct Virtue from the reſt; and ſo the *Inſects* feeding upon each reſpective Part, muſt then be of different Qualities from one another, and I conceive might be of greater Uſe in Medicine than the *Plants* themſelves, if they were once try'd; as the *Cantharides*, which are *Inſects* that, I think, feed upon the *Roſe-Tree*; the *Alkermes*, which are bred upon the *Shrub-Ilex*; and the *Cochineal*, which is an *Inſect* lately found in *Carolina*, to feed upon the *Indian Fig*, or *Prickly-Pear*; all which Creatures certainly contain the fineſt Spirits of the *Plants* they feed on.

I have often thought that it might be of ſome uſe, if ſuch *Animals* as are commonly bred for the Food or Nouriſhment of Mankind, were ſometimes fed with particular Diet, ſo as to alter the natural Virtue or Quality of their Fleſh; and eſpecially, if we were to practiſe upon ſuch as are frequently uſed in Medicine. The *Thruſhes* in *Italy*, which at one time of the Year feed upon *Myrtle-Berries*, have then the Flavour of *Myrtle* in their Fleſh, and conſequently ſome of its Virtue at the ſame time. So I doubt not but *Snails* (which differ ſo much from what I call *Inſects*, that they will eat of almoſt any *Plant*) may be made to alter their Virtues, by feeding them upon ſome particular ſort of *Plant* which we have a mind to extract any certain Virtue from; but this I leave to be better conſidered by thoſe whoſe proper Buſineſs it is.

*Inſects* infect *Plants* ſeveral ways, beſides actually devouring them; as for example, the *Peach-Trees*, which ſo frequently have their Leaves curl'd up in the *Spring*, and are at that time cover'd with a kind of *Honey-Dew*, are then generally attended with great numbers of *Ants*, which reſort to them; but it is not from the *Ants*, as is commonly imagined, that this ſhrivelling of the Leaves proceed; the *Ants* rather help the Tree than injure it; they come thither to feed upon certain little *Inſects* which harbour on the back of the Leaves, wounding the *parenchymous* Parts of them, from whence they ſuck the Juices of the *Plant*; and by that frequent wounding

ing, cauſes ſo many *Eſcars*, that the Leaves cannot avoid curling and becoming gummy. The *Inſects* I mention may be eaſily diſcern'd without Glaſſes; but being magnified with a common *Microſcope*, appear as large as the third *Figure* of the firſt *Plate*. *Plum-trees* are ſometimes diſtemper'd in the ſame manner with *Inſects*, ſomewhat like thoſe upon the Leaves of the *Peach-tree*, and the Bark of the tender Shoots of both thoſe Trees is frequently pinched by other ſmall *Inſects*; one of which I have cut out of it, and magnified, as in the fourth *Figure*, *Plate* I. Its Back was covered with Briſtles, which grew the contrary way to thoſe commonly found in the other Animals. Beſides theſe, ſome *Peach-trees*, and the *Almond-tree*, have their Leaves frequently bliſter'd and turn'd *red*, without any Appearance of *Inſects*; but if we examine them with a good *Microſcope*, we may eaſily perceive the *Parenchyma* of them to be fill'd with little white Worms; which, according to the Nature of other *Inſects*, would in time come to have Wings. Theſe *Inſects*, thus invading the young Shoots, will certainly deſtroy the Trees, if they are not carefully pruned off as ſoon as they appear; as I conſtantly do whenever I ſee them: And I am informed from a Perſon of Honour, that to prevent the Inſults of theſe, or any other *Inſects*, he has known it practiſed to bore a Hole with a ſmall Gimlet, ſloping downwards through the *Bark*, ſo as to reach the Wood of the Tree; and pouring into it ſome *Quick-ſilver*, about half an Ounce, or more, according to the Bigneſs of the Tree, and ſtopping it up, the *Inſects* then harbouring upon it will infallibly be deſtroyed: But if the *Mercury* reach the *Pith*, the Tree will be endanger'd: And I cannot chuſe but be of his

Opinion, altho' I have not made the Experiment; becauſe I have been witneſs of the Effect that *Crude Mercury* has upon *Worms* in human Bodies; which anſwers to what my Author has ſaid of its Operation upon the like kind of Creatures in Trees: And if then, by putting *Mercury* in one Part of a Tree, the whole is ſo affected by it, as to deſtroy the *Inſects* feeding even upon its moſt remote Parts, I think there will be no occaſion to diſpute the Circulation of *Sap* in *Plants*: But the *Inſects* which prey upon the Juices of the *Oak*, and have their proper Matrices, or Beds for hatching in, upon the ſeveral Parts of that Tree; yet produce other Effects than what I have hitherto mentioned. The *Oak-berries*, which we find in *May* and *June* upon the *Leaves*, and ſometimes upon the Strings of *Male-bloſſoms* or *Catkins*, are occaſion'd by a kind of *Fly*, not much unlike a *Flying-Ant*, which bites the moſt ſpungy or parenchymous Part of the *Leaf*, or the tender Part of the *Catkins*, and lays its Egg in the Wound; which, perhaps, by virtue of ſome Juice which the *Inſect* leaves at the ſame time, inclines the wounded Parts of the Tree to grow over the Egg, ſo as to encloſe it entirely, and make it ſwell till it is hatch'd, and grown big and ſtrong enough to eat its way out. I have ſeen of theſe *Oak-berries* as big as large *Peas*; and when they are at their full growth, are ſometimes, if they be expoſed to the *Sun*, of a browniſh red Colour.

There is another kind of *Inſect*, which attacks the more rough Part; ſuch as the Bark that encloſes the Bole near the Root of the *Oak*: The Eggs of this are ſhut up in a kind of Berry, ſomewhat leſs than the former, but of a moſt beautiful red Colour. They are commonly to be found in *May*, as I have obſerved in many Places in *Richmond-Park*. Beſides theſe, the *Oak-apples* proceed from other Wounds made by *Inſects* of a different kind, in the Bark of the tender Twigs, in which they lay many Eggs, that turn afterwards to *Worms*, as I have often ſeen. Theſe, which they call *Apples*, no more than the *Oak-berries*, are Fruits naturally deſign'd by Nature for the Tree; but in the manner I relate, are produced by accident, where the ſeveral *Inſects* happen to light.

It would be tireſome to relate all the ſeveral ways that *Plants* are attack'd by *Inſects*; and indeed would be needleſs to do it, if I was capable; ſeeing that ſo far as we yet know concerning theſe things, two or three general Remedies put in uſe againſt thoſe Creatures, will ſuffice to hinder them from making any conſiderable Progreſs. The *Matraſſes* of *Straw*, which I have already mention'd, are good Guards againſt the *Eaſterly* Winds to ſhelter *Wall-fruit*; and a good Fence of *Timber-trees* to the *Eaſt* of our *Orchard*, will contribute to preſerve our *Standards* from the *Caterpillars*; which, if they ſhould happen to come, may be deſtroy'd by the *Smoke* of wet *Straw* or *Weeds*. And in caſe our *Peach-trees*, and ſuch-like kinds of Fruit, ſhould be unfortunate enough to be invaded by thoſe ſmall *Inſects* I have deſcribed, the Pruning off thoſe Leaves or Twigs, as I have already hinted, is a ſure way to free us from them; as I doubt not would be the Uſe of *Quick-ſilver*, as I have directed. In the Time of the great *Plague* in *London*, it was propoſed to have large quantities of *Onions* expoſed in Boats upon the *Thames*, which were to have been continually bruiſed, chopped, and moved about; which it was imagin'd would abate the Infection, ſuppoſing the *Plague* to proceed from innumerable Armies of minute unwholſome *Inſects*, which were then floating in the Air, and drawn in with the Breath: If this Propoſal could have had the deſired Effect, then I think we might, by the ſame Rule, deſtroy the *Inſects* upon Trees, by waſhing the Leaves with Water wherein *Onions* had been bruiſed and ſteep'd, or by laying ſome bruiſed *Onions* under our Trees that are the moſt aſſaulted by *Inſects*.

There remains yet one thing relating to *Inſects*, and their manner of infecting of *Plants*, which is ſo curious, and I believe ſo little known, that I cannot well avoid mentioning it; and that is, concerning the *Folium-ambulans*, or *Walking-leaf*: Two Kinds of it I have dilineated, *Fig*. IV. and V. in the Firſt *Plate*, from the *Inſects* themſelves, in the Cabinets of the excellently learned Sir *Hans Sloane*, Bart. of the late indefatigable and curious Naturaliſt, Mr. *James Petiver*, and in thoſe celebrated Collections of Curioſity in *Holland*, belonging to the famous Mr. *Vincent* of *Harlem*, and Dr. *Frederic Ruyſh* of *Amſterdam*; all theſe Gentlemen are ſhining Ornaments of our *Royal Society*.

Both the wonderful *Inſects* I mention, are brought us from *Amboyna*, where there are many different Species of them, and, as I am inform'd, are produced in the following manner: The *Inſect*, when it has found its proper Tree of Nouriſhment, lays its Eggs ſeparately in the Buds of it, which hatch when the Buds begin to ſhoot; the *Inſect* then is nouriſhed by the Juices of the Tree, and grows together with the Leaves, till all its Body is perfected; and at the Fall of the Leaf, drops from the Tree with the Leaves growing to its Body like Wings, and then walks about; this is not common enough with us to be eaſily believed, and what I ſhould not have ventured to mention in this place, if the *Inſects* themſelves were not to be met with in the curious Cabinets of our own Country.

What I account the moſt curious Point belonging to this Relation, is, That the *Sap* of any Tree ſhould be ſo naturally adapted to maintain at once both *Vegetable* and *Animal* Life; and by that means to unite the Parts of two Beings, ſo diſtinct from one another, as *Plants* and *Animals*, and circulate the ſame Juices equally in the Veſſels of both. Indeed we have Inſtances enough to ſhew us how neceſſary the Juices of *Plants* are to the breeding up of ſome *Inſects*; and even to confirm that ſome kinds of *Inſects* cannot be brought to live, without their Eggs are properly lodg'd in, and entirely invelop'd with ſome certain Parts of *Plants*; as thoſe *Inſects*, for example, which Nature has allotted for the Leaves of the *Oak*, and which make the *Oak-berries*; but that a *Leaf* of a *Plant* ſhould ſo unite itſelf with an *Inſect*, as to make one diſtinct living Body, is wonderful.

The curious Mr. *Vincent*, above-mention'd, once ſhew'd me the Picture of a Branch of the Tree which the *Inſect*, *Fig.* IV. grew upon; in which was painted theſe ſtrange Creatures of ſeveral Sizes, adhering to the Tree in the manner I have related. The Head and ſmall Parts of the Legs were of a light-brown Colour; and the Wings and other Parts were of the Colour of the common *Bay-leaf*; which Colours the *Inſect* retains, even after it has been dead ſeveral Years.

The other of this kind, *Fig.* V. has Wings, of the figure and ſize of the Leaves of the *Spaniſh Broad-leav'd Myrtle*; but all its Parts, when I ſaw it, were of a *Feuillemort* Colour.

Now, as every *Plant* growing upon the Land is ſubject to be infected by *Inſects*, ſo the *Plants* of the Waters are alſo annoy'd by living Creatures that prey upon them. All ſorts of *Gnats* lay their Eggs upon the Waters; and ſo ſoon as they are hatch'd, and poſſeſs that degree of Life anſwerable to *Caterpillars*, we ſee them friſking about in the Water for a time, commonly making their Motions in the figure of an S. Theſe *Nymphæ*, like *Land-Inſects*, lay themſelves up at their appointed Time, and from that State reſuſcitate and fly away in Groops. Theſe Kinds are bred in ſtagnated Water, about *July*. The *Boat-Flies*, as they call them, and ſeveral Kinds of *Water-Inſects*, all have their reſpective Plants to feed on, and breed upon them (ſo far as I yet find) ſomewhat after the manner of *Land-Inſects*: It would take too much time to relate the ſeveral Particularities found in ſome of them, contrary to other living Creatures, or to deſcribe their ſeveral various Forms, which would be of little uſe to my preſent Purpoſe; I ſhall therefore now ſubmit theſe Obſervations concerning *Blights*, to the Cenſure of my Reader, and conclude with that curious Letter relating to *Plagues*, and other epidemical Diſtempers.

To

## *To Mr.* BRADLEY, *&c.*

BIBLIOTHECA BODLEIANA

*SIR,*

UPON diſcourſing with you ſome time ſince about *Blights* upon *Trees*, you ſeem'd to be of opinion that they were the Effect of *Inſects* brought in vaſt Armies by the *Eaſterly* Winds, and by lodging upon the *Plants* proper for their *Nouriſhment*, they there produced that *Diſtemper* which is call'd a *Blight* or *Blaſt*.

You was then deſirous of what Obſervations I had made concerning *peſtilential Diſtempers* ſubject to Mankind, which I believed to proceed from the ſame Cauſe that produced *Blights*, i. e. from *Inſects*; I have therefore, in anſwer to your Requeſt, endeavour'd to recollect what I have from time to time obſerved relating to that Caſe.

To pretend to give a natural Reaſon for *Plagues* or *Peſtilences* that happen in the World, may be thought by ſome to enter too far into the Secrets of the *Almighty*. *Plagues*, as commonly argued, proceeding from, or being the immediate *Finger* of *God*, without the Concurrence of *Nature*; that they are ſent down from him immediately for the Puniſhment of ſinful Nations, as in ſeveral Caſes mentioned in *Holy-Writ*; and doubtleſs ſuch Judgments on Criminals muſt have often been, and may yet be to the End of the World.

But however, the All-wiſe *God*, it may be ſaid, ſeldom in any thing acts contrary to thoſe Laws of *Nature* which he has inſtituted; rarely working by Violence, what may be done by natural Means: So that in this caſe, ſetting aſide Miracles, and what the *Almighty* can do, if he pleaſeth, by his own Power, my Endeavours will be to find out by what natural Means *Providence* may work to bring that terrible Judgment of *Plague* or *Peſtilence* upon any Country.

It is the common received Opinion, that the *Plague* proceeds from an Infection in the Air; and ſo undoubtedly it does: But then it will be aſked, Why the Air is not at all times thus infected?

Some will have it, from *Steams* or *Vapours* ariſing from ſome *poiſonous Minerals* at certain bad Seaſons; which being by us taken into our Bodies with the Air, ferments and corrupts the Humours of the Blood, and our moſt delicate Parts, and at length extinguiſheth that vital Fire in which our Life conſiſts.

But this can hardly be the true Cauſe; ſince few *Minerals* have ſuch mortal *Steams* conſtantly iſſuing from them, but at ſome times only; unleſs it be in the *Grotto del Cane*, at *Baia* near *Naples*, and ſome other Places of the like kind.

This *Grotto* is a Hole dug into a Bank near the *Lake d'Averno*, whoſe Water is warm, continually bubbling or boiling up: This *Lake* is cover'd with a green Scum, and never freezes, lying not far from the famous *Sulfo Terra*, where much *Brimſtone* is made, and where *Smoke* iſſues out of the Ground in many Places. The Entrance of the *Grotto* is hardly wider than a common Door, and not high enough to admit a tall Man without ſtooping, growing narrower towards a Point, a few Yards diſtant from the Mouth: At the Bottom 'tis very wet, almoſt ſtanding Water, with Stones lying in it; and the Sides are alſo moiſt about a Foot or two in a ſtrait Line above the Bottom, which is as high as the *Steam* riſes, and is known by putting in a lighted Torch into the *Grotto*, and lowering it by degrees, till the Flame comes below the Top of the *Steam*, and then goes out. The Torch thus extinguiſh'd, the *Smoak* which is then below the *Steam*, cannot riſe above it, but ſlowly ſteals out of the Mouth of the *Grotto*; and then aſcending, is diſperſed. Nothing will burn in this *Steam*, nor any Creature either of the Land or Water live in it longer than it can hold its Breath; not even an *Inſect*, as I have experienced.

I ventured to put my Mouth below the Surface of this ſuffocating *Steam*, and ſucking in a little of it, I found it of a very ſtrong Scent, ſomewhat like *Sal Armoniac*. It ſeem'd to me, The Man who ſhewed us the *Grotto*, when he ſaw that I was going to put my Head into the *Steam*, proteſted againſt it; and when he could not prevail, went away: But I told him, if I ſuffer'd as the Dog had done, he ſhould make uſe of the ſame Remedy, and recover me in like manner. But I ſoon ſatisfy'd my Curioſity, without receiving any Harm.

Somewhat like this, is what I ſuppoſe are call'd *Damps* in *Mines*, in *Britain* and other Places; which come only at times, and are not laſting: Theſe *Damps*, when they riſe, will not ſuffer any Light to burn, and ſoon ſuffocate the Workmen, and kill them, if they are not preſently drawn up into the open Air. No other Means has yet been diſcover'd to recover them after ſuch Accidents, excepting a freſh *Turf* be cut, and laid to their Mouths; which perhaps may be for the ſame reaſon that the Mud being apply'd to the Noſe of the Dog, recovers him after he is drawn out of the *Grotto*.

Upon the Town-Walls of *Legborn*, and in other Places of *Tuſcany*, they have Holes made like large *Ovens* for the Preſervation of *Corn*. Theſe *Conſervatories* are brick'd within-ſide, and coil'd round with *Wiſps* or *Cables* of *Straw:* On their Tops, which are level with the Surface of the Earth, are placed large Stones, with a Hole cut in each of them, big enough to admit Men and Baſkets to go down. Theſe Places, when they are fill'd with *Corn*, are cloſely ſtopp'd with Stone-covers, and Earth flung over them; but hither, ſuch *Corn* only is brought, as is infeſted with *Weevels* or *Ferments*, beyond the Cure of turning them; when, by the help of this Method, all living Creatures in it are deſtroy'd, and the moſt violent *Ferment* it can be ſubject to, is ſtopp'd, the *Corn* is taken out, and return'd to the Magazines. In *Sicily*, *Barbary*, and I think in all other hot Countries, this is the only way made uſe of to preſerve their *Corn* from ſpoiling by theſe Accidents; which it is never ſafe from, after it is thraſh'd, till it is uſed: And I ſuppoſe theſe *Conſervatories* would have the ſame Effect upon all other Seeds or Grain.

'Tis remarkable, that in and about *Genoa*, where vaſt quantities of *Corn* are laid up, they have none of thoſe Places for curing their diſtemper'd *Corn*, but are often conſtrained to ſend it to *Piſa*, to be thus brought to itſelf, there being no Earth near *Genoa* that will produce that Effect.

In my Time, one of theſe *Conſervatories* being empty, was left open, where ſome *Frenchmen* were playing at *Bowls*; and one of the *Bowls* falling into it, one of the Company was let down with Ropes to fetch it up, but he was no ſooner down but he was ſuffocated to death; and one of his Companions, who endeavoured to get him out, was ſo ſenſibly touch'd with the noiſome Vapour of the Place, that before he could get half way, he was forced to return: But this was accidental, and I ſuppoſe was ſomewhat like the *Damps* in *Mines*, which I have already taken notice of.

The poiſonous *Vapours* I have here mention'd, are plainly more deſtructive to Animal Life, than any others that have been known; in that they act much quicker upon the Spirits of Animal Bodies, than thoſe which are ſaid to occaſion the *Plague* or other *peſtilential Diſtempers*: And there is this difference likewiſe between them, that a Body poiſon'd by the firſt, will not communicate that Poiſon to another, as People infected by that

*Vapour* which cauſeth the *Plague* are known to do; therefore I think it is plain, that the moſt nauſeous Vapour of itſelf will not cauſe any *Diſtemper* that is *epidemical*.

It ſeems then, that the *Plague* proceeds from ſome other Cauſe; and that I ſuppoſe to be *Inſects*, of that extraordinary Smallneſs, that they are not to be diſcerned by the naked Eyes; they are ſo light, that they float in the *Air*, and ſo are ſuck'd in with the Breath. Such *Inſects* not being among us commonly, but only when they are either brought to us from ſome remote Place by the *Wind*, or hatch'd or nouriſh'd by ſome Intemperance of *Air*, or from poiſonous *Vapours* ariſing from *Bogs*, *Ponds*, *Ditches*, or ſome ſuch unwholſome Funds of ſtagnating Water.

Theſe *Inſects* are various, according to the Nature of the Water or Air they are bred in; their Eggs being firſt laid by ſome flying Animals, which are then hatch'd, and paſſing thro' the ſeveral Changes common to *Inſects*, at length take wing; and being drawn in with the Breath, may perhaps be either kill'd in our Bodies, and cauſe a violent Ferment in the *Juices*; or elſe finding proper Nouriſhment, they breed in the *Lungs*, *Stomach*, or other Parts within us, and probably may occaſion thoſe Biles and Breakings out in the tender Parts of the Body, that are called *Plague-ſores*.

But theſe *Inſects* are ſome of them ſo extremely ſmall, that they are only capable of being diſcern'd with good *Microſcopes*; and when they are wing'd, and ſo quite perfected, may perhaps in Swarms be carried from one Country to another by the Wind. It is *Inſects* of ſeveral Kinds and Colour, which cauſe the Surface of Waters to appear ſometimes *green*, *red*, or *black*; which laſt Colour in Water, is obſerv'd by the Herdſmen to poiſon the Cattle that drink of it; and they ſay, cauſeth the *Murrain*, which is the *Plague* in Cattle, and is very infectious.

It has been obſerved, that *Plagues*, and the moſt contagious Diſtempers, have commonly happen'd in thoſe Years, when the *Eaſterly Winds* have more than ordinarily prevailed in the *Spring* and *Summer* Seaſons; then the Air comes to be infected, and rarely or never at other times. Theſe Winds we ſee bring *Caterpillars*, and many different *Inſects* and *Flies*, which meeting with Places fitly adapted to nouriſh them, they are there brought to their wing'd State; which I conceive is the ſame in the inviſible Animals as in the viſible; nor indeed is any Part of the Earth or Waters, and it may be, the pure Air itſelf, free from the *Seeds* of Life: Nothing is out of Motion, or can be void of it, ſetting forth the Glory, and infinite Power, and Wiſdom, of the *Creator*; from whence theſe infinite Productions proceed, ſome for one Uſe, ſome for another. What we call the bad, are thoſe, which at unſeaſonable Times invade by Swarms the Bodies of living Creatures, to whom they are deſtructive, and cauſe the *Murrain*, *Rot*, and ſuch-like mortal Diſeaſes.

Again, that the *Plague* proceeds from living Creatures brought by the *Eaſterly Winds*, ſeems probable; for that ſuch *Peſtilences* are moſt malignant in the *Summer*, after the *Eaſt Winds* of the *Spring* have blown; which paſſing over the greateſt Continent of the Earth, bring theſe *Inſects* with it: But the contrary Effect have the *Weſt Winds*, which come to us over the vaſt *Atlantick Ocean*, attended with great Rains. Theſe laſt *Winds* cure the *Plague* (it may be) by carrying back the Remainder of thoſe *peſtiferous Inſects* which yet ſurvive, to the Country from whence they came: And *Froſt* and *Snow* likewiſe ſtop the Infection, perhaps by killing them, or laying them to ſleep till the next Seaſon, when they may be either brought back again by the *Eaſterly Winds*, or be enliven'd, or freſh Swarms hatch'd by the Temperature of Air ſuitable to them.

I have not yet found that any Winds, except the *Eaſt Winds*, ſuch as paſs over *Tartary*, bring any Infection with them; nor have I ever heard of *peſtilential Diſtempers*, in any Part of the World, unleſs in ſuch Places only where the *Tartarian Winds* reach; *Tartary* being a Country full of *Woods*, *Bogs*, and *Fens*, it ſeems the moſt capable of producing thoſe Creatures in abundance, which may be carry'd by the *Wind* to certain Places in ſearch after their Food, as are *Locuſts*, and ſome certain *Birds*, which are known to paſs from one Country to another.

*Diodorus Siculus*, in his Hiſtorical Library, Book XII. p. 286. ſaith, "The *Plague* broke out "afreſh at *Athens*, when they had been but lately "freed from that *Contagion*: It raged with that "Violence, that they loſt four thouſand Foot-"Soldiers, and four hundred Horſe, and of o-"thers, Freemen and Servants, above ten thou-"ſand. And now, becauſe the Courſe of the "Hiſtory may require a Declaration of the Cauſes "of this violent *Diſtemper*; it is neceſſary in this "place to ſet them forth:

"Abundance of Rain had fallen in the *Win-"ter*, by reaſon whereof the Earth being over-"wet, (eſpecially in low and hollow Grounds) "the Water lay in the ſtanding Pools, which ting and putrifying by the Heat of the r, thence proceeded a Miſt of groſs g *Vapour* which corrupted the *Air*; and , the Want of good Food much advan- e Progreſs of the Diſeaſe; for the Year the *Fruits*, by too much Rain, were and unwholſome.

re was likewiſe a third Cauſe of this r, which was this: The *Eteſian Winds* *I take to be the* Maiſtrali, *or* North- Winds) blew not this *Summer*, by whoſe e Breezes, the violent Heat of the *Air* was to be allay'd at other times; ſo that the t being now more exceſſive, and the *Air* as were inflamed, Men's Bodies wanting the ual Refreſhment, contracted an evil Habit, " from whence aroſe *burning Diſtempers*; and " thence it was that many ſeized with this Diſeaſe, " caſt themſelves into *Pits* and *Wells*."

I was not in *England* in 1666, when the *Plague* raged in *London*; but I have heard from ſome of thoſe that were then in the City, that the *Summer* was ſo dry, that hardly any Rains fell until *November*; which Drought muſt be occaſion'd by an unuſual Frequency of *Eaſterly Winds*.

Experience ſhews us how much *Inſects* delight in ſtinking Places, and that they increaſe much faſter in uncleanly Cities, ſuch as *London* was formerly, than in cleaner Places: But the City of *London* having been for the moſt part burnt the Year after the *Peſtilence*, its Streets were enlarged, many Drains were made, and good Laws were put in execution for keeping the City clean; and it has not had any *Plague* ever ſince.

It is remarkable, that when the *Plague* reigned in *London*, *Bucklers-Bury*, which ſtood in the very Heart of the City, was free from that *Diſtemper:* The Reaſon given for it is, that it was chiefly inhabited by *Druggiſts* and *Apothecaries*, the Scent of whoſe *Drugs* kept away the *Infection*; which, according to my Notion, were ſo unnatural to the peſtilential *Inſects*, that they were kill'd or driven away by the ſtrong Smell of ſome ſort of *Drugs*. The Smell of *Rue*, and the Smoke of *Tobacco*, were preſcribed as Remedies againſt the *Infection*; but eſpecially *Tar* and *Pitch Brrrels:* And I have been informed by a Perſon of Credit, that the People of *Lime-Houſe* were not affected by it, nor ſome of the *Docks*, perhaps for the ſame Reaſon. So alſo the Uſe of *Sea-coal* may now be one Means to prevent the *Plague* in *London*.

The People of *Legborn* obſerve, that at the End of every Eighteen Years they are ſubject to an *epidemical Diſtemper*, which, if it be not the *Plague*, is hardly to be diſtinguiſhed from it. I was there in two of thoſe Years; the ſecond was in the Year 1685, and was much worſe than the firſt: It began about the Beginning of *Summer*, with frequent *Eaſterly Winds*, (ſuch as are not uſual) continuing to blow almoſt without Intermiſſion till towards *Winter*; much as *Diodorus Siculus* deſcribes the Year to have been when the great *Plague* was at *Athens:* We wanted that *Summer* our *Maiſtrali* or *North-Weſt* Winds as we uſed to have; which are the *Trade-Winds* in all the hot Countries of the World, following the Courſe of the *Sun*. About Nine or Ten in the Morning, theſe Winds begin to blow, and laſt till Sun-ſet; when ſoon follow the Winds from the Shore, which blow till the next Day about Nine; and then the *Trade-Wind* retakes its Courſe.

The firſt *Infection* began in Houſes near the Walls of the Town to the Landward, from whence the *Eaſt Wind* blew, and by degrees crept towards the Sea; but the *Infection* did not touch ſuch Places, which were inhabited by *Merchants* and *Shop-keepers*, who dealt in *Salt* and *pickled Fiſh*, *Pitch*, *Tar*, and ſuch-like Commodities.

To the *Northward* of the Town, towards the Sea-Shore, lay very boggy, ſtinking Ground. Theſe *Marſhes* commonly about *Autumn* cauſe *Agues* and *Fevers*; which may be from vaſt Swarms of inviſible unwholſome *Inſects* which riſe from thence at that Seaſon, but of a different *Poiſon* from thoſe which cauſe the *Plague*. So the like Places about *Civita-Vecchia*, *Scanderoon*, and I may mention the Iſle of *Sheppy* likewiſe, ſeem to cauſe *Agues*. And it is obſervable, that from the Mouth of the River *Magra*, which divides *Tuſcany* from *Liguria*, along the Sea-Coaſt of *Italy*, as far as *Terracina*, is very unhealthy, and ſubject to *Agues* and *peſtilential Fevers*, being *marſhy Ground*.

We may alſo obſerve, that in *Turky*, *Egypt*, and *Barbary*, when the *Plague* rages, the *Franks*, the *Engliſh*, &c. are ſeldom infected with it; which ſeems to confirm my Opinion, that this Sickneſs proceeds from *Inſects*, who having their certain natural Nouriſhments reſpectively appointed them, do not in thoſe Places infect Strangers, who have different ways of eating and living from the Natives, and are of a contrary Nature of Body. It would be well worth Enquiry, if the People of thoſe Nations, that were in ſtrange Countries in the Times of *Peſtilence*, were alſo free from *Infection*.

King *Charles* II. when he was told of the Sickneſs at *Leghorn*, ſaid it muſt have been occaſioned by the *new Fortifications* which were then building in thoſe marſhy Places. And it is very rational to believe, that turning up thoſe unwholſome *Muds*, and expoſing them to the *Sun*, did much increaſe the *Diſtemper*, by infecting the *Air*, and filling it with greater Supplies of poiſonous *Inſects*.

I cannot help taking notice likewiſe of the raging *Diſtemper* which was among the *Cows* about *London* ſixteen or eighteen Years ago: It was ſo violent and infectious, that if *one* had it, all others that came within ſcent of her, or even eat where ſhe grazed, was ſurely infected: It ſeized their *Heads*, and was attended with Running at the *Noſe*, and a very nauſeous *Breath*, which killed them in three or four Days. The *Herdſmen* would not allow it to be the *Murrain*, nor could give any Account from whence it did proceed, or could find out any Remedy againſt it: They only tell us, the unuſual dry *Summer*, and the continued *Eaſt Winds*, were the occaſion of it. This *Diſtemper* had been for two or three Years before it came to us in *Lombardy*, *Holland*, and *Hamburgh*, to the Loſs almoſt of all their *Cattle*. The *States* of *Holland* cauſed a *Medicine* to be publiſhed for the Good of thoſe who had their *Cattle* thus diſtemper'd; but having been try'd here, 'twould not cure one in ſeven, but rather increaſed the *Infection*, by keeping the diſtemper'd *Cattle* longer alive (by ſome Days) than they would have been without it. 'Tis remarkable, that no *Oxen* had this Diſtemper, but only *Milch Cows*, which were more tender than the *Males*. The *Herdſmen*, to keep their *Cattle* from the Infection, let them blood in the Tail, and rubb'd their Noſes and Chops with *Tar*; and when any happen'd to die of it, they were burnt, and buried deep under Ground. It began at *Iſlington*, ſpreading itſelf over many Places in *Middleſex* and in *Eſſex*; but did not reach ſo far *Weſtward* from *London* as twenty Miles.

The moſt general Opinion concerning the Cauſe of this *Diſtemper*, was, that the *Cattle* were firſt infected by drinking ſome unwholſome ſtanding Water, where 'tis probable ſome poiſonous *Inſects* were lodged and bred; the *Summer* having been extremely dry, attended almoſt conſtantly with *Eaſterly Winds*, the Graſs almoſt burnt up, and the Herbs of the Gardens almoſt deſtroy'd by *Inſects*; but ſuch as they were, (unfit for Table-uſe) were given to the *Cattle*. There was likewiſe ſo great want of *Water*, that many were forced to drive their *Cows* five or ſix Miles to it.

The *Electuary*, publiſh'd upon this Occaſion by the *States* of *Holland*, was compoſed of moſt, if not all the *Drugs*, uſed in the moſt ſerviceable *Medicines* that were made uſe of againſt the *Plague* among Men; moſt of which Ingredients we know to be mortal to *Inſects*, as ſtrong-ſcented Roots and Herbs; but above all, *Aromatick Gums* and *Saps* of *Plants*, as *Rue*, *Garlick*, *Pitch*, *Tar*, *Frankincenſe*, and *Olibanum*; but I believe, before all others, Extractions from the *Cedar*, nothing preſerving Bodies from Worms better than that. Theſe Ingredients are much uſed in *France* and *Italy*, to prevent or deſtroy Infection, by burning them, and ſmoaking ſuch Bodies, Letters, or any other Things as are brought from infected Places, after they have made *Quarentine*, and are not ſuffered to come on Shore till they have undergone this Operation.

It is not againſt Experience, that *Inſects* can live and increaſe in Animal Bodies: How often do we find Men, Women, and Children troubled with *Worms?* What Varieties of thoſe *Inſects* are often voided by them? And how ſhould that be, if they were not either ſuck'd into the Stomach with the Breath, or taken into it with ſome unwholſome Food? For they cannot breed in ſuch Bodies from nothing, without either their Eggs, or themſelves are brought thither by ſome Accident. For if they were the natural Produce of Animal Bodies, they would then be alike common to all, which we know they are not.

I have been inform'd, that in the Year 1714, when this *Mortality* among the *Cows* was at its height, that towards the End of the *Summer*, ſome Farmers bought in freſh Cattle, and turning them into the ſame Fields where many *Cows* had died before, they took the Infection, and died likewiſe: But the following Spring thoſe Fields were void of Infection, and the *Cows* that were put into them did very well; but what were then put into the *Cow-Houſes*, where the ſick *Cows* had been the Year before, were ſeized with the *Diſtemper*, and died; which ſeems to inform us, that it was the Effect of *Inſects*, which thro' the Warmth of thoſe Stalls were preſerved from the Severity of the *Winter*'s Froſt; but ſuch as were left in the open Fields were deſtroyed by the Cold. I have heard that a Woman about *Camberwell* cured ſix in ſeven of her *Cows*, by giving them once a Week an Infuſion of *Rue* and *Ale-wort*.

But it may be aſked, Why theſe *infectious Diſtempers*, ſubject to *Men*, *Cattle*, and *Plants*, are not univerſal? And why the *Plague* ſhould not be as well in *India*, *China*, the South Parts of *Africa* and *America*, as in theſe Parts of the World? (For I do not find that it has ever been in me time when the *Inſects* are hatch'd and he contrary way by the *Wind* from *Tar-* Ve are inform'd, that upon the Coaſt of e Winds are ſo regular, that from *Octo-* *March* they continually blow from the *eaſt*; and from that Month to *October*, ſt contrary way.

ve now given you what Obſervations I have concerning peſtilential *Diſtempers*; which I ay, in ſome meaſure, ſerve to confirm your of *Blights*.

*I am, Yours*, &c.

***The End of the Third Part.***

OF

# OF THE Kitchen-Garden.

## PART IV.

### CHAP. I.

### *Of the* HOT-BED.

A *Hot-Bed* is the common Help made Uſe of by *Gardeners* to forward the Growth of a *Plant*, and force Vegetation, when the Seaſon of itſelf is not warm enough. By this Means (if it be managed with Skill) the hotteſt Climate of the World may be ſo nearly imitated, that Seeds of *Plants* brought from any Country between the *Tropicks*, may be made to flouriſh: In a word, it is both curious and uſeful.

In order therefore to have a right Underſtanding of the *Hot-Bed*, let us conſider what degree of Heat is required for the Growth of *Plants* we are to raiſe upon it; for Nature muſt be imitated as near as poſſible, and not forced or exceeded, if we hope for Succeſs in our Undertaking.

*Heat* and *Moiſture* are certainly the Rudiments of Vegetation; and therefore whoever would promote the Growth of a *Plant*, muſt contrive how to have them both in ſuch due Proportion, as that neither one or the other exceeds thoſe Limits which Nature has allotted for the Growth of *Plants*. A dry *Heat* we find rather ſcorches and ſhrinks a *Plant*, than makes it grow; and *Wet*, if it is not quickly exhaled from the Root of a *Plant*, chills it, and often injures it paſt Recovery. A moderate ſweating *Heat* therefore is the moſt deſirable, ſuch as is raiſed by the Ferment of wet *Straw* or *Horſe-Litter*, which for a time will then draw from the Earth, lying upon it, that gentle *Steam*, which we find contributes ſo much to the Growth of many *Plants*, beſides the putting thoſe Juices into Motion which are lodged in the Root, and circulating them through the *Veſſels* of the *Plant*.

The *Steam*, which I ſuppoſe to riſe from the Root into the *Veſſels* of *Plants* to furniſh them with *Sap*, Chap. I. Part I. of this Work, will indeed of itſelf keep a *Plant* alive; but then, at the ſame time, the *Bark*, *Leaves*, and other *ſpungy Parts* of a *Plant*, which encompaſſes the *Sap-Veſſels*, if they are over-dry, will ſhrink and pinch thoſe *Veſſels* ſo very cloſe, that they cannot admit the *Sap* to *circulate* through them in ſuch Quantity as is neceſſary to ſupport the *Plant* in Vigour; on the contrary, when the *parenchymous* or *ſpungy Parts*

*Parts* of *Plants* are kept moiſt by the *aſcending Vapours*, or the Air which continually flows round about them, then the *Sap-Veſſels* are alſo more open, and at Liberty to receive the Nouriſhment riſing from the Roots.

To explain this, let us conſider thoſe *Plants* which are cultivated in Pots, and ſet ſingly in Chambers, and other Places of the Houſe for Ornament in the *Summer*; though we allow them large *Pots*, freſh *Earth*, and *Water* enough, and *Air* as much as they have in a *Green-houſe*, how ſenſibly do they decline in a few Days, which happens only for want of that *Steam* which is always abroad, (more or leſs) riſing from the Earth in the Day, and condenſing and falling upon them again at Night.

Nor can the *Pots*, ſet ſingly in a Chamber, have this Help as thoſe have which are ſet together for Shelter in the *Winter* in a *Green-Houſe*; the Number of *Pots* in a Collection of *Plants*, affording *Steam* enough to nouriſh one another, which one ſingle *Pot* muſt want.

The like is to be obſerved in a dry Seaſon, when we are forced to water *Plants* that ſtand abroad; they are by that Help but juſt kept alive, becauſe the Earth round about them is ſo dry, that it hardly emits any *Steam*, or at leaſt not enough to ſupport them; but when Rain has fallen, we find a contrary Effect: The Vapour then riſes from the Earth every where about the *Plants*, and makes them flouriſh: So that I prefer the floating of Grounds, for the Welfare of many Kinds of *Plants*, before ſimple Waterings; but there are ſome particular Sorts which it would deſtroy, as I ſhall explain elſewhere.

A *Hot-Bed* then appears to be of Uſe as long only as it can ſend out ſuch *Vapour* from the

Earth lying upon it, as is neceſſary for the Support of the *Plants*; and when it wants the *Heat* which is required for that Purpoſe, it muſt be renewed; for elſe the Moiſture, which muſt be maintained to nouriſh the Roots of the *Plants* growing in it, will chill and deſtroy them. I would not be ſuppoſed here to mean the *Steam* which ariſes from the *Dung* itſelf, for that is known to be deſtructive to all *Plants*; it is the *Vapour* only which the *Heat* of the *Dung* evaporates from the Earth lying upon it, which will help the *Plants*, and that too muſt be temperate and well qualified, leſt it ſcald them, which may be moderated according to our Deſire, by laying the Earth upon our *Hot-Bed* of a due Thickneſs, anſwerable to the *Heat* below it.

Having thus given my Opinion concerning the Qualities required in a *Hot-Bed*, I ſhall in the next place proceed to give proper Directions for making it. The *Dung* of *Horſes* or *Aſſes*, ſuch as is taken freſh out of the Stables or Stalls, is the moſt proper for our Purpoſe; it ſhould then be thrown up into a Heap, with a few Sea-Coal Aſhes among it, and very well watered. In this State, if the quantity be very large, it ſhould lie to heat about eight Days; but two or three Loads only need not lie above half that Time before you uſe it. The Bed then muſt be marked out ſomewhat more than three Foot wide, anſwerable to the Size of your Frames; the Length of it running from *Eaſt* to *Weſt*, ſo that it may face the *Sun*. Some *Gardeners* dig a Trench a Spit deep to make the Beds in; and others ſave that Trouble, and make it all above Ground. I have tried both ways, and find ſo little Difference, that I cannot ſay which is beſt; but, I think, if the Ground be wet and ſpringy, it is moſt reaſonable

ſonable to make the *Bed* quite above Ground, leſt the *Dung* be chilled. In the ſpreading of the *Dung*, we muſt chiefly have regard to lay it equal in every Part, that when the *Bed* comes to ſettle, it may not lie uneven; and beſides that it may heat all together: The whole muſt be trodden down from time to time, as freſh Litter is laid upon it, till at length the *Bed* is of the Subſtance you deſire, which ought to be (in *Winter*) about three Foot high.

Having thus prepared your *Bed*, ſet on your Frames, and put the Earth you deſign for it upon the Dung, laying it Ridge-wiſe, that it may be more conveniently turned over as you ſee occaſion, if the *Bed* ſhould burn: When you find the extreme *Heat* begins to abate, level the Earth upon it, to ſow what Seeds you deſign; minding always to have upon your *Bed* five or ſix Inches thick of Earth, to prevent the extreme *Heat* of the *Dung* from ſpoiling your Crop; and that the Roots of whatever you ſow or plant, may always keep free from the Dung, which, whether it be hot or cold, ſpoils moſt Plants that touch it. In ſhort, to ſee the working of two or three *Beds*, if a Man is careful to make Obſervation of them, will better inform him than any written Directions; for ſome *Beds* will heat ſooner than others. And again, I have known one *Bed* outlaſt three in its *Heat*, which depends partly upon the Nature of the Dung it is made of, and alſo in the true Method of working it. The Frames which cover theſe *Beds* likewiſe contribute greatly to the maintaining the *Heat* in them. A large Frame requires a greater *Heat* to warm the *Air* it encloſes, than a ſmall one: So if two *Beds* were made equally (as poſſible) of the ſame Strength, the one covered with a large Frame, and the other with a leſs; that with the large Frame would ſooner cool than the other, and perhaps preſerve a *Plant*, when thoſe under a ſmaller Frame would burn: And the too frequent opening of a *Bed*, likewiſe contributes to cool it much ſooner than it would otherwiſe be. In a word, rather deſire ſuch *Heat* only in your *Hot-Bed*, as will ſuffice to keep out the Froſt, than covet to make your *Plants* grow quick.

But as it is not ſuppoſed that any *Hot-Bed*, without ſome Help, can maintain its *Heat* long enough to bring what we plant upon it to Perfection; ſo it is commonly practiſed when it begins to cool, to cut away the Sides of it ſlopeways, and laying freſh *Dung* to them, it recovers its loſt *Heat*, which is called *backing* or *lining* of a *Bed*; and this Work the skilful *Gardeners* will repeat ſometimes five or ſix times in a Seaſon, as they ſee Occaſion, rather than make freſh *Beds*.

let theſe lie in a Heap together well mixed, to be ſcreened or ſifted when it is wanted: Rotted *Leaves*, well conſumed, are alſo good, if *Dung* is wanting.

## CHAP. II.

## *Of* MELONS, CUCUMBERS, *and* MUSHROOMS, *their* Culture.

HAVING in the foregoing Chapter given the neceſſary Directions for preparing a *Hot-Bed*, I ſhall now proceed to offer ſome Obſervations and Experiments I have made in the *Culture* of *Cucumbers* and *Melons*: And firſt concerning the Raiſing the *Plants* for the general or *Summer* Crop, for it is that we muſt depend upon for a Quantity of Fruit. Towards the Beginning of *March* is time enough to put in the Seeds of *Melons*, which we deſign for *Ridge-Plants*; thoſe, if the Bed be moderately warm, and in good Temper, will come up and be fit to plant out four Inches apart, about a Week after ſowing: They may thus remain till their firſt Leaf is about the Bigneſs of a Crown-Piece; and then when the ſecond or third Joint appears, cut off the Prime Leader from each Plant, near the *Ear-Leaves* or *Lobes*, and they will each of them quickly put out three other *Runners*, which will produce Fruit plentifully; and thoſe alſo are commonly pruned at every third or fourth Joint,

when

when they come to run: This is the common way.

About the latter End of *April*, or the firſt Week in *May*, the *Melon* Plants thus raiſed, will be fit to plant upon Ridges, which ſhould be made thus: Cut a Trench about two Foot and half wide, and ſixteen Inches deep; in which lay of Horſe-Litter, prepared as I have directed, for the *Hot-Bed*, about two Foot thick, which will raiſe it ſomewhat above the Surface of the Ground. In this Work take care to ſpread the Dung equally, and tread it over gently to ſettle it; then at the Diſtance of about four Foot in the middle Line of the Ridge, make Holes about ten Inches over, and about ſix Inches deep, and fill them with the prepared Earth: After this, cover the whole with the ſame Soil, about five Inches thick, and make them into flat *Beds* four Foot wide, for the *Vines* to run upon.

About two or three Days after the Ridges are thus prepared, plant two *Melon Plants* in each Hole, ſprinkling them with Water, (that has been warmed in the *Sun*) and covering them with Square or Bell Glaſſes; immediately upon which, either Mats or Straw ſhould be put to keep the *Plants* from withering by the *Sun*'s Heat, till they have ſtruck Root; and ſo likewiſe ſhould *Cucumber-Plants* be ordered, if they are planted out upon Ridges at this time of the Year, but they require no pruning.

About the latter end of *May*, or a Fortnight after planting, they will be in a growing Poſture; and then if the *Eaſterly* dry *Winds* are ceaſed, tilt up the *Glaſſes* about an Inch in the Heat of the Day, to give them Air for two or three Hours, that by degrees they may be hardened to the Weather. It is now I cannot help taking Notice of two or three things practiſed by the *Gardeners* in the *Culture* of *Melons* and *Cucumbers*; which, although they may perchance be generally practiſed, yet I am ſure they deviate from the Laws of Nature; and Experience has ſhewn me, that their Work in thoſe Points is needleſs, and might better be avoided. In the firſt place, when a *Melon*, or *Cucumber-Plant* is in Bloſſom, it is cuſtomary for them to pull off the falſe Bloſſoms, which they ſay would weaken the *Plant*; but if thoſe are the Male-Flowers, as they ſeem to be, it is them that are ordained by Nature to ſet the Fruit, (which I think I have already explained.) In the next place, it is a common Practice to lay the ſeveral Leaders of the *Vines* at equal Diſtances from one another, and often lift them up to view the young Fruit, which is very hurtful; for that the Veſſels, which convey the Juices to the Fruit, are very tender, and ſubject to be bruiſed by the leaſt Bending from their Place of natural Growth. But yet, more than this; I have ſeen a Bed of *Melon-Plants*, which an ingenious Profeſſor of *Gardening* has pruned and laid in Order (as he called it) with great Dexterity, and had no falſe Bloſſoms left upon them, that have from time to time offered abundance of *Fruit Bloſſoms*; and by being frequenttly handled and diſturbed, have not ſet one Fruit; while, on the other hand, two other *Plants* of *Melons*, which were ſown later by a Month or more, and had been diſregarded, ſurprized him with ſeveral large Fruit, when he hardly expected to find them in Bloſſom: And ſo in the *Vines*, for forward *Cucumbers*, the Fruit that ſets firſt, ſeldom comes to Perfection, becauſe, upon all Occaſions, the *Vine* is taken up to look how it comes forward; but in the moſt remote Corner of the *Bed*, where the *Plants* are the leaſt regarded, commonly comes the firſt perfect Fruit. And laſtly, I find another Practice too frequent, which I account as unreaſonable as the others, and that is the expoſing a young ſet Fruit to the *Sun*, by taking away the Leaves from about it. A Gardener of ſmall Experience may know, that Fruit of any Sort grows beſt in the Shade, and that the immediate Heat of the *Sun* is only neceſſary for the ripening of Fruit, and not for the Growth of it; for the Sun-Beams falling directly upon a *Plant*, dries and pinches the *Veſſels* of it; ſo that the *Sap* wanting a free Paſſage, it is impoſſible it can fill the *Plant* ſo quickly and plentifully as it would do, if the Parts were larger and more open, ſuch as they are always in the Shade; and that this is Truth, I appeal to common Experience, whether Fruit growing in the Shade is not larger than the ſame Kind growing in the full Sun.

In *Spain*, *Portugal*, and the *South* Parts of *France*, the *Melon Gardens* are ſeldom regarded after they are ſown, till the Fruit begins to ripen. And I have obſerved that they do not fail of good and large Fruit in great Quantity, although they give them no other Dreſſing than what is neceſſary to prepare the Ground for the Reception of the Seeds.

It was the Opinion of ſome of the Ancients, that Women ſhould not always be ſuffered to come among *Plants*; for that at certain Periods, the very Approach of a Female was pernicious and deſtructive to them: But that Notion, with many others of the like Nature, has long ſince been deſtroyed by Experience to the contrary, and ſeems only to have been maintained for want of better Judgment.

But now ſuppoſe our *Melons* are fully ſet, we may then count about forty Days to the time of their ripening, which I think is obſerved as a Rule among moſt experienced *Gardeners:* Give them gentle Waterings now and then, if the Earth be extreme dry; for *Melons* do not delight in abundance of Wet; neither will the *Fruit* be well taſted, if the *Plants* are kept too moiſt. But *Cucumbers* love frequent Refreſhings of Water, and will not proſper without it. Upon the ſetting of a *Melon*, it is commonly practiſed, and with good Reaſon enough, to pinch or prune off the running Branches two Joints above the *Fruit*; ſo that all the *Sap*, appointed for the Nouriſhment of that Branch, may be turned into the young Fruit for its Nouriſhment. This may contribute to make the Fruit large, if it be well guarded with *Leaves* from the ſcorching Rays of the *Sun*, during the time of its Growth: But as ſoon as it is fully compleated, then indeed it cannot well be too much expoſed to the *Sun*'s Heat, even to receive it through a Glaſs, which will forward its ripening, as may be known by the agreeable Odour it will ſend forth when it is fit for the Table.

For the more certain producing of *Melons* of a right Flavour, let me adviſe that no *Cucumber Plants* be ſet near them, leſt the *Male Duſt* of the *Cucumbers* ſhould happen to be carried with the Wind upon the *Bloſſoms* of the *Melons*, and perhaps ſet them for Fruit, which will then certainly give the *Melons* ſo produced the Flavour of the *Cucumber*, in Proportion as the *Farina* happens to fall in greater or leſſer Quantity. *See* Part I. Chap. II. *of the Generation of* Plants.

During the Growth of the *Vines*, the Earth they run upon ſhould be carefully kept weeded, and ſtirred gently on the Surface; for the Roots both of *Melons* and *Cucumbers* are tender, and always ſhoot out in length as far as the Branches reach; but ſome indeed, more than others, are ſubject to run into *Vine*, and that for two Reaſons: *Firſt*, all *Plants*, either of *Melons* or *Cucumbers*, as their Fruit is greater or ſmaller, produce *Vines* of greater Size, or leſſer Proportion. I have known *Vines* of large *Melons* that would ſhoot (if they were left at Liberty) about ſix Foot in a *Summer*, and the ſmall Sorts have not grown two Foot; and ſo in *Cucumbers*, one Root of the large *Turky Kind* has produced as much *Vine* as four or five Roots of the ſhort *prickly Cucumber*, which ought to be conſidered when we plant the Ridges: One *Plant* of a large Kind, if it thrives, will be enough for one Hole; when perhaps of the ſmaller Sorts, three or four may be neceſſary for the ſame Purpoſe. But *Secondly*, All freſh *Seeds* of *Melons* and *Cucumbers* will produce much larger *Vines*, than thoſe *Seeds* which have been kept ſeveral Years. New *Seed* is apt to draw ſuch Plenty of Nouriſhment, that it is ſeldom prolifick; for too haſty Thriving is ever an Enemy to Breeding or Prolificity. So on the other hand, when I have ſown *Melon* and *Cucumber Seeds* of ſeven or eight Years old, the *Vines* have been cloſe jointed, and more ſubject to produce Fruit.

The *Italians* have a *Melon* which is commonly ripe about *Chriſtmas*, and eſteemed among them as a Rarity: Some of the *Seeds* of it I have now diſpoſed of to ſeveral Perſons in *England*; but I know not whether every one is acquainted with the right Method of its Management; therefore I ſhall venture to give my Advice concerning the raiſing and preſerving that Rarity of the *Winter*;

The Seeds ſhould be ſown towards the latter end of *April*, or in *May*, in a Bed moderately warm; and the *Plants*, when they are come up, be ſo ordered, that the Fruit ſhould not come to its full growth till the end of *September*; the natural Warmth of the *Summer*, without any Art, will be ſufficient for that End, till the cold Evenings in *Auguſt* begin to approach; then it will be neceſſary to ſhelter both the *Plants* and *Fruit* from the *Froſts* and cold *Dews*, till you think your Fruit will grow no bigger; and in the Heat of the Day, ſtrip the *Plants* of their *Leaves*; let the Sun then dry the Stalks, and pull them up by the Roots, to hang up afterward in a *Green-Houſe*, or ſome well expoſed Place, to dry more thoroughly; after which they may be ty'd up by the Stalks in a dry Room, or laid in Cheſts of Bran, Wood-aſhes, or very dry Sand, to keep them from the *Winter Air* till *Chriſtmas:* If they are not then ripe enough, wrap them in a Cloth, and lay them in a Horſe-dunghill for about twenty-four Hours, which will ferment their *Juices*, and cauſe Ripeneſs; as I have heard, and am apt to believe.

But ſeeing that the Pride of the *Gardeners* about *London* chiefly conſiſts in the Production of *Melons* and *Cucumbers* at Times either before or after the natural Seaſon, I ſhall alſo preſcribe ſome Rule for the Raiſing and Cultivating them at thoſe Times; which I ſhall lay down in as plain Terms as poſſible.

Moſt of the *Gardeners* I am acquainted with make their *Seed-beds* for theſe *Plants* in *January*, although ſometimes the Ground is covér'd at that time with *Snow* near a Foot thick; but I muſt confeſs, I ſhall never follow that Method, while I have any regard to the Ways of Nature: For is it reaſonable to believe, that young *Plants*, tender as they muſt be, when they are thus juſt forced out of the Ground, can be able to withſtand the leaſt *Air* from abroad, when *Froſts* and *Blaſts* continually reign? And to preſerve them without *Air* is as impoſſible: Therefore to go more reaſonably to work, prepare a *Hot-Bed* about four Foot ſquare, and two Foot high, in the firſt Week of *October*, and ſow the *Seeds* both of *Melons* and *Cucumbers* in it, when the Heat of it is moderated; a Week after they are come up, plant them four Inches apart on the ſame *Bed*, after having ſtirred the Earth very well. In this Month the Days are commonly warm, and in ſuch Weather they ought to have as much *Air* as you can poſſibly give them; but the Nights are uncertain, and therefore the *Plants* muſt then be covered up cloſe with the *Glaſſes* and *Mats* over them. In this firſt raiſing of the *Plants*, a skilful *Gardener* may make them as hardy as he pleaſes; for it is not his Buſineſs ſo much to draw or force them, as to ſtrengthen them againſt *Winter*.

All *Annuals* are as naturally diſpoſed to live from the Autumn to the Spring, if they are kept from flowing in the *Winter*, as they are commonly known to flouriſh in the *Summer* Months; and both *Cucumbers* and *Melons*, which are likewiſe of the *Annual* Race, might as well be kept the *Winter*, as any other *Exotick Annual* whatſoever, if we would not let them bloſſom before *Chriſtmas*. I have myſelf kept young *Plants* of *Amaranths*, and of the *Naſtertium Indicum*, which I ſowed in Autumn, till the *Summer* following, only in a common *Green-Houſe*; and I am perſuaded *Cucumber Plants* might be preſerved almoſt with as little Trouble. I am informed, that the laſt Year a *Gardener* ſowed ſome *Cucumber-Seeds* as ſoon as he had gathered them, and cut Fruit from thoſe *Plants* very early in *January*.

When the *Plants* are in the ſecond Joint, I would adviſe that they be either planted in ſmall *Garden-Pots*, or *Baſkets*, open on their Sides, made with *Oziers*, about ten Inches over the Top, and four Inches deep; ſo may we more eaſily remove them without Damage from one Bed to another, as the Severity of the Seaſon may require: But I prefer the *Baſkets* rather than the *Pots*; becauſe when the *Plants* begin to run, the *Roots* are at full liberty to find their way into the neighbouring Earth of the Bed they are to ſtand in, without tranſplanting, which might endanger them. In one of thoſe *Baſkets* may be planted about five or ſix *Plants*, leſt any of them ſhould go off; though it is reaſonable to believe, that a *Plant* which has had the Advantage of a gradual declining Seaſon to harden itſelf in, will not be ſo ſubject to ſuffer by the Weather, or require ſo much Heat to maintain it, as thoſe which make their firſt Appearance in the midſt of Froſt and Snow. In ſhort, let the Gardener rather endeavour to defend them from the Weather, than to force them: As the Bed cools, let him line the Back and Front of it with freſh Dung; let the *Plants* receive as much Air and Sun as he can reaſonably give them, and guard them well with Straw and Mats in the Night, and there is no doubt but he will have Fruit early enough: But I ſpeak to the Ingenious, who may yet improve what I have ſaid, and not to thoſe who deſpiſe Learning, becauſe they know little.

I ſhall now conclude this Section with a word or two concerning the Raiſing of *Cucumbers* on the natural Ground for Pickling; for this we have no more to do than chuſe a Piece of Ground pretty rich, and well expoſed to the Sun; and after having wrought it well with a Spade, make Holes in the form of Baſons, about four Foot diſtant from each other, and ſow the Seeds in them the firſt Week in *May*, if the Weather be ſettled; put at leaſt a Dozen Seeds in a Hole; for it is much better to have *Plants* to fling away, than to want a Crop, which often happens by being too covetous of Seeds.

## SECT. II.

## *Of MUSHROOMS.*

WHoever has been accuſtomed to eat *Muſh-*

them by their Smell, and turn them out of the Ground: Of theſe Kinds I have not known any that have been propagated by Art, as the *Champignons* have been; which, tho' this laſt Kind is common enough in many Places in *England*, without any Culture, yet it turns to good account to raiſe them in our Gardens, ſince the Trouble of doing it is not conſiderable, and their Uſe begins to be known. The true *Champignon* has its Fleſh very white, firſt appearing like a Button, with a Footſtalk adhering to it; the Chives within it are of a Fleſh-colour; and as the Cap of it explains itſelf, thoſe Chives become darker by degrees, and are at length black. I have ſeen ſome of the Caps when they have been fully explain'd, about ſix Inches over, and of a conſiderable Thickneſs. This Kind is the only Sort I can recommend for its Goodneſs among the *Cap-Muſhrooms*, and then only when they are freſh and free from Worms, which are apt to breed in them, their Stalks eſpecially, and ſuch are not accounted wholſome. We commonly find this Sort growing in rich Paſture-Grounds, about the latter end of *July*, or in *Auguſt* and *September*, after the Rains have fallen.

The Obſervations I have made concerning the natural Produce of *Muſhrooms* ſeem to diſcover that they are produced by ſome Putrefaction in the Earth, or in thoſe Bodies they are apt to grow upon: We have not in *England* leſs than one hundred different Kinds that I have obſerved, beſides thoſe very minute Sorts that can only be diſcern'd with the *Microſcope* in the Moldineſs of Fruit and Liquors; which laſt Kinds are ſo quick of growth, that in leſs than twelve Hours time they are perfected; and ſhedding their Seeds, ſeveral Hundreds of the ſame Kinds immediately vegetate; whence it is that

Mouldineſs ſo ſoon overſpreads thoſe Bodies it once infects.

The Rings of *Muſhrooms*, which are often ſeen upon Downs, Plains and Commons, are called by the Country People, *Fairies Dances*; theſe are not always of one Sort of *Muſhroom*, but various, according to the Soil that produces them. It is obſervable, that the Graſs is always much greener and ranker in the Line where thoſe *Muſhrooms* appear, than in other Places of the ſame Grounds, which I have often wondered at, as well as the exact Figure of a Circle they have repreſented. When I enquired into the Reaſon of this ſtrange Production, I diſcovered two things worth Obſervation; the firſt was, that juſt under the Turf where the *Muſhrooms* were growing, was a Tract or Path made by *Piſmires*, which was not only hollow in many places at that time, but the very Covering of that Paſſage was made of Earth extremely fine, which thoſe Creatures had flung up. The Fineneſs of the Earth wrought by thoſe laborious Animals might very reaſonably contribute to the extraordinary Vegetation of the Graſs growing upon it; and the Hollowneſs of the Ground underneath might produce that Mouldineſs within it, which afterwards might be formed into *Muſhrooms*; for it has always been my Opinion, that if Earth is made extremely fine, and by that means the *Salts* of it more at Liberty to act, whatever grows upon it will be much more vigorous. Again, we find by Experience, that in ſuch Places where the Ground lies hollow near the Surface, it always turns muſty and mouldy.

But, Secondly, *Garden Snails*, the large black *Dew Snails*, and others without Shells, called *Slugs*, when they couple, always make Choice of ſhort Graſs to creep upon: It is their Manner, when they generate, to take a large compaſs upon the Ground, and meet one another. Thus I have ſeen them creep in a Circle for more than half an Hour, going over the ſame Ground at leaſt twenty times before they could join, leaving upon the Graſs where they crept a viſcous, ſhining Matter. So that it may be, that Slime, when it putrifies, may produce the *Muſhrooms* we find growing in Circles upon Commons; and I am the more apt to believe it ſo, becauſe I have more than once obſerved, that where a *Snail* has left ſuch a Tract upon the Graſs, a few Days afterwards I have found *Muſhrooms* to come up: But it muſt be obſerved, that ſuch as come up in this manner are not fit to eat. However, I ſuppoſe from Hints of this kind it was, that the edible Kind was firſt propagated in the Garden.

It is practiſed in *France*, to dig a Trench five or ſix Inches deep in the Ground, and lay in it either the Dung of *Horſes*, *Mules*, or *Aſſes*, ridgewiſe, in the ſhape of an *Aſs*'s Back; then cover the Dung about an Inch thick with freſh Earth, ſuch as is juſt taken from under a Turf, rather ſandy than otherwiſe, and then cover the whole Bed either with Straw, or dry Litter, as well to defend it from the Froſt in the *Winter*, as from the ſcorching Heat of the *Summer*'s Sun. The Bed being thus prepared, water it twice or three times a Week, without taking off the Covering of Straw, and in about a Month's time the *Muſhrooms* will begin to appear, and muſt then be drawn up by the Root. Theſe Beds may be made every Month, to produce *Muſhrooms* all the Year about.

The late famous Mr. *Harriſon* of *Henly* made *Muſhroom* Beds much after the ſame manner, only ly inſtead of Horſe-dung he made uſe of old Thatch, which he told me turn'd muſty, and grew moldy much ſooner than Horſe-dung, and would produce *Muſhrooms* quicker, and in greater plenty.

So I have likewiſe known ſome *Melon* Ridges, which have been thinly covered with Earth, have produced *Muſhrooms* about *Autumn*, eſpecially if Straw or Litter has been laid upon them about *Auguſt*.

It is ſaid, that the Cuttings of the *White Poplar* or *Abele*, about the Root, being ſteep'd in hot Water well fermented with *Yeſt*, will produce very good *Muſhrooms* in a few Days: And it is likewiſe reported, that the looſe Chips of the ſame Tree, being buried in a decay'd Hot-Bed, will do the like.

About *Naples*, there is a ſort of Stone which produces good *Muſhrooms*, if it be laid in a moiſt Place, or well water'd.

## CHAP. III.

## *Of* ESCULENT ROOTS, *or ſuch as are proper for Table Uſe.*

THE *Roots* which are commonly made uſe of for the Table are *Parſnips*, *Carrots*, *Turneps*, *Skirrets*, *Scorzonera*, *Beets*, *Radiſhes*, *Horſe-Radiſhes*, *Potatoes*, *Jeruſalem Artichoke*, *Onions*, and *Leeks*, and their Kinds.

SECT.

## SECT. I.

## *Of the* PARSNIP.

TO begin with the *Parſnip*: It affords a large ſweet *Root*, very nouriſhing, and of great uſe in the *Winter*. This *Plant* delights in a rich Soil, where the Root of it will become very large; but ſhould not be eaten till the Froſts have enter'd the Ground. The *Seeds* of it are ſown in *March*, and will come up in about three Weeks time: When they have been above Ground about a Month, they muſt be hoed, leaving the Space of five or ſix Inches between the Plants. A ſkilful Gardener will ſow *Radiſhes* among them, which in about forty Days may be drawn off; or ſometimes *Spinage*, which will be alſo fit to cut before the *Parſnips* begin to ſpread. And indeed, it is not the leaſt Part of a Gardener's Skill to underſtand how to double crop his Ground with ſuch things as will not ſpoil one another. After the firſt Hoeing of the *Parſnips*, keep them as clean from *Weeds* as poſſible, till they are full grown, and then take them up, and keep them in Sand for Uſe, cutting off all their green Tops three or four Days before we lay them up.

## SECT II.

## *Of the* CARROT.

CARROTS delight in ſandy Soil, where their *Roots* will grow to a great bigneſs, and be much ſweeter and more free from Worms, than thoſe which are ſown in rich Garden Ground. Sow thoſe you deſign for *Winter* Uſe, at the ſame time you ſow *Parſnips*; and in the ſame manner fling in among them *Radiſhes*, and a few *Lettuce*: When they are come up, hough them as I have directed for the *Parſnips*, and take them up when they are full grown, to be kept in Sand for *Winter*. About *London*, the Gardeners are curious to have young *Carrots* for the Spring; which they raiſe in the following manner: Towards the End of *July* they prepare a Piece of Ground, and ſow it when it is moſt likely to rain; and about *Michaelmas*, if the Seeds be good, and the Weather has been favourable, the Roots will be ſomewhat larger than a Tobacco-pipe, and the *March* following will be fit to draw for the Table; but this Crop muſt be ſoon gather'd, leſt they run to ſeed, which they will certainly do in *May*; and then they will not be fit to eat. But that there may not want ſome to ſucceed theſe, I have known an ingenious Gardener make a Hot-bed in *February*, which he cover'd about ſix Inches thick with Earth, and ſow'd it with *Radiſh* and *Carrot Seed*, covering it in bad Weather with Mats upon Hoops. The *Radiſhes* will ſoon be fit to draw, and the *Carrots* be ready for the Table about *May*, when the Spring Crop is gone.

## SECT. III.

### *Of the TURNEP.*

TURNEPS have many Excellencies, and are more generally propagated about *London* than any other Root; they are a wholſome Diet, and are of extraordinary Uſe to the Farmer for feeding Cows and Sheep. This kind of *Root* is always ſweeter in a ſandy Soil, than any other Ground; but will have larger Roots, if the Land be ſomewhat inclinable to *Loam*. From the middle of *July* to the 10th of *Auguſt*, and not later, the Seeds may be put into the Ground, that the Roots may have time to apple (as they call it) before *Winter*. When the *Plants* have two or three Leaves apiece, they ſhould be hough'd at the Diſtance I preſcribed for *Carrots* and *Parſnips*, and this Crop will be off time enough in the Spring either to ſow *Barley*, or any other Grain or Seed, on the ſame Spot. It is ſeldom practiſed, tho' I think it would be very acceptable, to provide *Turneps* for the *Summer*: And indeed I ſee no reaſon why we may not have them all the Year about: We may ſow them in the Spring as well as at Autumn; but planting them out for Seedling Plants in the Spring and Summer Months will do much better. I have more than once known the Experience of this way, and find it to anſwer as one would deſire.

## SECT. IV.

## Of the SKIRRET.

THE *Skirret* has a very agreeable Root, although it is propagated but in few *Gardens*; and it may be, the Rarity of it is owing to the want of the right way of cultivating it. We may propagate it two ways, either by ſowing the Seeds in *March*, or by tranſplanting the *Off-ſets* from the *Roots* in that Month: It delights in a light, rich Soil, ſomewhat moiſt, which I find contributes to make the Roots large. Some Years ſince a *Gardener* in *Surrey* ſent to me for ſome *Seeds* of this *Plant*, and ſow'd them in a black, moory Soil, which had lately been a Plantation of *Aſparagus*; in that Spot of Ground he had the largeſt *Skirrets* I ever ſaw, and very ſweet: But about *London*, 'tis more generally practiſed to raiſe them from Slips, or Sets; which muſt be done thus: In *March*, when the Leaves begin to put forth, take them out of the Ground, and part them into as many Slips as you can take off with *Roots*; but be ſure let only the freſh ſpringing *Fibres* remain on them, and not any of the old *Roots*; then prepare *Drills* about four or five Inches deep, to plant them in five or ſix Inches apart, and keep them well water'd till their Roots are full grown; then take them freſh out of the Ground, as you have occaſion to uſe them. Some ſay the Roots will be larger, if they are not ſuffer'd to run to ſeed.

## SECT. V.

## *Of* SCORZONERA, *and* BEETS.

SCorzonera, or *Spaniſh Salſify*, has a Root, which in my Opinion, is no leſs pleaſant than the former: It loves a light Soil, and is eaſily raiſed by ſowing the Seeds in *March*. And *Beets* alſo, both the Red and White Kinds, are raiſed in the ſame Month from Seeds, and delight in a ſandy Soil.

## SECT. VI.

## *Of the* RADISH.

I Have already mention'd the *Radiſh*, as a *Root* which might be ſown promiſcuouſly among other Roots in *March*; but ſome Particulars in the *Culture* of it yet remain worthy the Knowledge of my Reader: The Soil it chiefly covets is Sand, or other light Ground well wrought with the Spade: It may be ſown in ſuch Land any time between *February* and *September*, minding always to let the Ground you ſow be more in the Shade, as the Seaſon is more hot. I have ſown ſome *Seeds* of the *Spaniſh Radiſh* in *Auguſt*, that have been fit to draw juſt as the *Winter* began, and have continued good till the *February* following: But to have a Crop to ſucceed thoſe, it is common to ſow ſome at *Michaelmas*, that they may be above Ground in their *Seed-leaf* only before *Winter*; and thoſe will be in ſeaſon about *March*, if they have had the Shelter of ſome warm Wall.

## SECT. IX.

## *Of the* ONION.

I Now come to treat of the *Onion*, a *Root* more generally uſed in the *Kitchen* than any other. Of this there are two Kinds worth the *Gardener*'s Care*:* The firſt is the *Spaniſh Onion*, which affords a large ſweet-taſted Root; and the other, the *Stratſbourg Onion*, which is more biting, and laſts good much longer than the former; but the Difference of theſe two Kinds makes no alteration in the Culture of them: They ſhould both be ſown early in *March*, in rich Garden Soil, and houghed about the latter end of *April* with a very ſmall Hough, leaving about three Inches between the *Plants*, till they begin to grow fit for *Sallets*, and then they may be drawn or thinn'd where they ſtand cloſe together. In the ſowing of this Crop, let not the *Gardener* be too ſparing of *Seeds*, leſt many of them be naught, which often happens; and it may be too late in the Year to re-ſow the Ground, when he is convinced the firſt *Seeds* have fail'd; better too many than too few; the Ground may be eas'd of too great a Burden, ſooner than over-loaded with it. When the *Leaves* begin to change their Colour, the *Roots* will grow no more that Year; and then they may be pull'd up in dry Weather, and laid in Rows expoſed to the Sun, till they are dry'd as well as may be without doors: After which let no Rain get at them, but ſpread them on the Floor of a *Green-houſe*, or ſuch cover'd Place, to dry more thoroughly for laying up for *Winter*. Some of this Store may perhaps remain good till towards *April*, if they were well dry'd at gathering, and kept ſo afterwards; but it will be impoſſible, with the greateſt Care, to keep many of them from growing in the Houſe; and of thoſe which happen to *ſpire* about the Beginning of *February*, and have large *Roots*, plant them at two Inches diſtance, in Lines half a Foot a-part, to bring *Seeds* for another Year. When theſe have ſhot up the *Flower-ſtems* about two Foot high, ſecure them with Sticks from the Aſſaults of the *Winds*; and as ſoon as the *Seed-veſſels* begin to open, cut them off, and ſpread them on a *Mat* in the *Sun* to ripen, turning them every Day, for a Fortnight or three Weeks, before they will be fit to be beaten out of their Huſks: Take ſpecial care no Wet get at them, for they will ſprout with the leaſt Moiſture, and never afterwards be fit to ſow. It is a certain Rule, that if any *Seed* has had Moiſture enough to put forth its *Radicle* never ſo little, and is after that, check'd before the *Ear-leaves* appear, it cannot by any means be made to grow afterwards.

The Beginning of *Auguſt* we muſt ſow a freſh Crop in ſome warm Place to ſtand the *Winter*, and ſupply the *Kitchen*, when the dry'd *Onions* are gone. The Sowing will be fit to draw in *April*, and furniſh a Supply till the Spring Crop comes in.

## SECT. X.

### *Of the* LEEK.

THE *Leek* is ſown in *March*, in a well-wrought Ground, and ſhould be hough'd like the *Onions*, and kept free from *Weeds*. In *July*, about the middle of the Month, plant them out in Lines about five Inches a-part, in very rich, light Soil, but chuſe wet Weather, if poſſible, which will contribute to make them very large; for one Shower of Rain does more good to any new tranſplanted Herbs than twenty Waterings. The *Leek* will not bear *Seed* till the ſecond Year, and then muſt be gather'd, and order'd like *Onion-ſeed*.

## SECT. XI.

## *Of GARLICK.*

GARLICK is propagated from *Cloves* of the *Root* planted early in *March*, about five Inches a-part: The Soil light and ſandy, for ſtiff Ground makes the Roots ſmall: The *Blade* will begin to turn yellow in *July*, and then take them up in a dry Day, and tie them in Bunches for Uſe. This, and all other Roots, that are to be kept the *Winter*, muſt be very well dry'd, or they will rot.

## SECT. XII.

## *Of ESCHALOTS.*

ESchalots, or *Shallots*, are of ſuch uſe in *Cookery*, that a *Kitchen-Garden* ought not to be without them: A light, ſandy Soil is the moſt agreeable to them, without any Mixture of Dung. They are propagated by planting their *Cloves* or *Off-ſets* of the *Roots* early in *March*, about four Inches a-part, and will be fit to take up as ſoon as their Blade turns yellow, which will not be till the latter end of *June*, or beginning of *July*, if they like the Ground; then let them be well dry'd and laid up for Uſe. *N. B.* About a Rod ſquare of

Ground planted with theſe *Roots* will be enough for the Uſe of any Family.

## SECT. XIII.

## *Of* CHIVES, *and the* ROCAMBOLE.

CHIVES ſhould always be found in the *Kitchen-Garden*; they are frequently uſed in the *Winter Sallets*, when young *Onions* are ſcarce. The *Off-ſets* of their Roots ſhould be planted at ſix Inches diſtance in *March*, cutting off their Blades at the ſame time: They love a light, rich Ground, and Shade. Thus order'd, they will be fit for uſe at any time of the Year; and the oftener they are cut, the ſmaller will be their Graſs. About one Rod ſquare of them will ſerve a large Family.

The *Rocambole*, for its high Reliſh in *Sauces*, has been greatly eſteem'd formerly, but now-a-days is hardly to be met with; I think however, it ſhould not be wanting in a compleat *Kitchen-Garden*; for, conſidering how ſmall a Quantity of it is ſufficient to give us that Reliſh which many *Onions* can hardly give, it ought to be preferr'd. The Part of this *Plant*, which is made uſe of, is the Head of the *Flower-ſtem*, compoſed of many ſmall *Bulbs*, which, as ſoon as they are ripe, ſhould be gather'd, and kept dry.

It is propagated by planting the *Off-ſets* of the *Roots*, or little *Bulbs*, ſix Inches a-part in *September*; and delights in a ſandy Loam, without any Mixture of Dung.

## CHAP. IV.

## *Of ASPARAGUS, ARTICHOAKS, COLLY-FLOWERS, CABBAGES, and thoſe of the* Cole-Race.

THE *Aſparagus* is one of the great Dainties of the Spring, and what I account to be part of the moſt neceſſary Furniture of a *Garden*; it brings great Profit to the *Gardeners* near *London*, either propagated upon natural *Beds*, (as they are called) or when they are forced with Dung in the *Winter*. I have heard, that a *Gardener* about *Weſtminſter* has received above thirty Pound in one Week for forced *Aſparagus*.

I ſhall therefore be very particular in ſetting down the Method of propagating this *Plant*, as well in *natural Beds*, as in the *Hot-Bed*; and firſt begin with the *Seeds* and manner of raiſing them.

Such as are minded to make a Plantation of *Aſparagus*, ſhould have a peculiar Regard to the Goodneſs of the *Seed* they deſign to ſow, for therein lies the chief Hopes of Succeſs: The largeſt *Buds* therefore ſhould always be encouraged to run up as ſoon as they appear above Ground; and when they begin to branch, muſt be ſtaked up to ſecure them againſt the Winds. Theſe vigorous Shoots will afford us *Seeds* well nouriſhed, partaking of the Strength of the *Mother-Plant*. The largeſt I have yet ſeen are the Produce of *Batterſea* in *Surrey*, and ſuch-like Places, where the Soil is *ſandy*; ſo that we may readily infer what Soil is the moſt proper for them. In Ground of that Kind, without any

Mixture of Dung, I recommend them to be ſown about the firſt Week in *March*, if the Weather be open. In this Seminary they come up without any Trouble, and will be fit to plant out the *February* or *March* following, either to train up for *Hot-Beds*, or to be planted for a Crop in *Natural Beds*; for *Plants* of one Year old will thrive much better when they come to be tranſplanted in *Natural Beds*, than thoſe that have ſtood two Years in the *Seed Bed.*

If we raiſe them for the *Hot-Bed*, make choice of a Piece of Ground that has been enriched with Dung, and well dug and mellowed; upon which ſtrike out Lines at ſeven or eight Inches a-part, and plant the *Aſparagus Roots*, when they are one Year old, in them, at four Inches Diſtance. In this Nurſery they are to remain two Years before they will be fit for the *Hot-Bed*, cutting down their *Haulm* every *Michaelmas*, and keeping them free from Weeds, as we muſt do the Plants in the *Natural Beds.*

If we chiefly covet to raiſe *Aſparagus* in the *Winter*, ſow every Year, and make Plantations after the ſame manner related, to have Plants that may ſucceed one another. The *Hot-Beds* muſt be made pretty ſtrong, and covered immediately with Earth ſix Inches thick, encompaſſed with *Straw-Bands*; in this, plant your *Aſparagus Roots* (taken freſh from the *Nurſery-Beds*) as cloſe as they can be placed together, without trimming them, or cutting off any of their *Fibres*. When this is done, cover the Buds of the Plants two Inches thick with Earth, and let it remain in that State for five or ſix Days before the Frames or Glaſſes are put over it, and then lay on three Inches thick of freſh Earth over the whole; in about ten Days after planting, the Buds will begin to appear above Ground, and then give them what Air the Seaſon will allow; for it is the Air that makes them green, and chiefly contributes to their good Taſte.

A *Bed* thus prepared will laſt good about a Month, ſhooting freſh Buds every Day, if the ſevere Weather does not hinder. As it begins to cool, ſome warm Horſe-Litter ſhould be laid upon the Glaſſes every Night, which will contribute as much to make the Buds ſhoot, as if they were to have new Dung put under their Roots. The time for this Work is from *November* till *April*, when the natural Crop comes in, making freſh Beds every Month to follow one another, and give us a conſtant Supply.

But to plant *Aſparagus* for a *natural Crop*, we muſt proceed in a very different way. About the Beginning of *March* (which is the beſt time for tranſplanting of *Aſparagus*) meaſure out your Ground, allowing four Foot for the Breadth of each *Bed*, and two Foot for every *Alley* between the *Beds*; open a Trench at one End of it, and lay into the Bottom of the Trench, about the Thickneſs of ſix or eight Inches of Horſe-Dung well rotted: Go on then to trench the ſame Quantity of Ground, lying next to the firſt Trench, throwing the Earth which comes out of the ſecond Trench upon the Dung laid in the Bottom of the firſt: Continue to work in like manner till the whole Piece is completed and levelled; then in Lines, at eight or ten Inches Diſtance, plant the *Aſparagus* taken freſh out of the *Nurſery*, ſpreading their Roots, and covering their Buds with Earth, about four Inches thick.

When four Rows are planted, leave a Space for an *Alley* about two Foot wide, and proceed to plant four Rows more for another Bed, and ſo continue your Work till the whole is planted. As ſoon as that is done, ſow the whole Piece with *Onions*, and rake it over as level as poſſible, for the *Alleys* will not be of any Uſe till after *Michaelmas*, when the *Onions* will be off, and the *Shoots* the *Aſparagus Plants* have made that *Summer*, muſt be cut down; then dig up the *Alleys*, and throw Part of their Soil upon the *Beds*, to raiſe the Earth about five or ſix Inches above the Buds of the *Plants*, ſupplying the *Alleys* at the ſame time with Dung, or ſome rich Soil.

In this State let the *Beds* remain till *March* following, and then rake down the Earth. I have known ſome Gardeners ſet *Beans* about *November*, in the *Aſparagus Alleys*, cloſe under the Sides of the Beds, which may beſt ſhelter them from the *Eaſt Winds*.

The *Alleys* muſt be turned up in this manner every *Winter*, and now and then enriched with Dung; but we muſt be ſure to let *Michaelmas* be paſſed before we cut down the *Haulm* of the *Aſparagus*, and give them their *Winter* Dreſſing; and alſo that we are not later than *Mid-March*, without raking and laying ſmooth the *Beds*; for after that time, if we ſhould diſturb the Earth, we ſhould run the Hazard of breaking many Buds that begin to ſhoot.

It is a general Rule not to cut any till the fourth Year after Planting, although the *Buds* are very large, for it weakens the *Roots*: However, I think, (to ſatisfy the Impatience of ſome) that where the *Plants* are ſtrong, as in the third Year, a few may be taken here and there in very ſmall Quantities, about ſix times in the Seaſon, without greatly hurting the *Plants*.

The fourth Year we may certainly begin to cut, and we ſhall then ſenſibly feel the Profit of our Labour and Expectation: Not any Bud that appears above Ground muſt be ſuffered to grow in the Cutting Seaſon, unleſs they come from ſuch

Roots as have been planted to make good the Deficiencies of the firſt Plantation, and thoſe muſt be ſuffered to run up every Year till they have gathered Strength.

About the Beginning of *April*, the *Aſparagus* appear above Ground, and may be cut till towards the Beginning of *June*, when they have ſtood five Years; but will not bear cutting longer than *Mid-May*, if they are younger. In the cutting of them, have a ſpecial Regard to cut downwards a little ſloaping, with a Knife made blunt at the Point, leſt you injure the *Crown* of *Buds* lying on the top of the Root; for if you cut them more horizontally, you may then injure ſeveral Buds that are under ground. A Piece of *Aſparagus*, thus carefully managed, will laſt good near twenty Years.

## SECT. II.

## *Of the ARTICHOAK.*

WE may either propagate the *Artichoak* from *Seed* or *Suckers*, but the latter is moſt commonly practiſed; however, let us uſe either way of raiſing them, we muſt be ſure to allow them a ſtrong rich Ground, with Dung mellow'd in it, well-expoſed to the Sun: About the Beginning of *March* we may ſow the *Seeds*, to be planted out the following Month; and the middle of *March* is the moſt proper Seaſon to ſlip the Roots, either for new Plantations, or to make good the Deficiencies of the old ones, which ſeldom paſs a *Winter* without ſome Loſs, notwithſtanding the greateſt Care has been taken to preſerve them. When we take off the *Slips*, we muſt leave growing upon every old Root (if it be ſtrong) three Heads, which will give us ſo many good Bloſſoms about *Mid-June*; and the *Slips* we take off ſhould be planted two Foot a-part in Lines, four Foot diſtant from each other, for nearer than that would hinder the thriving of the *Plants.* This young Plantation muſt be well watered after planting, and perhaps may afford us ſome good Flowers about *September*, though, for the Sake of the Plants, it is to be wiſhed they would not; for when they bloſſom the firſt Year, the Roots are endangered; therefore ſome *Gardeners* break off the Bloſſoms as ſoon as they begin to appear, and about the Middle of *July* break off the Stems of the old Roots that have done blowing, that they may furniſh themſelves with freſh Shoots to ſtand the *Winter.*

## SECT. III.

## *Of the COLLY-FLOWER.*

WHOEVER is minded to propagate this *Plant*, muſt chiefly have regard to the Goodneſs of the *Seed*, which ought to be ſaved only from ſuch *Flowers* as were large and white, for otherwiſe there can be no Hope of Succeſs; and in the next place, the Ground muſt be very rich, and not over dry. Being thus provided, we may begin to ſow the *Seeds* in *March*, in ſome well-expoſed Corner of the *Garden*, where the young *Plants* may be ſheltered at their firſt coming up from the froſting Evenings. About the Middle of *April*, when they are in their firſt *Leaf*, they muſt be planted in a *Nurſery*, about five or ſix Inches a-part, and ſtand there till the latter End of *May* or *June*, to be removed to ſuch Places as you deſign they ſhall bloſſom in: If it is poſſible, do this Work in rainy Weather, which will make them ſtrike Root quickly; or elſe, if the Seaſon happens to be dry, make Holes in the Ground like Baſons, about three Foot a-part, and water them well immediately before you plant the *Colly-Flowers* in them, which will contribute to keep the *Plants* freſh and green, till their Roots begin to ſhoot; by this means, and frequent Waterings when the Seaſon is dry, we may expect large Flowers in Autumn, but eſpecially if the *Alleys* between the *Plants* are floated with Water, which will nouriſh them much more than common Watering. Some of this Plantation will not offer to flower till after *Michaelmas*, and then ſuch *Plants* muſt be taken up with the Earth at their Roots, and ſet together (upright) in a *Green-Houſe*, or ſome other ſuch-like Place, where the Bloſſoms will enlarge themſelves, and be fit for Uſe in the *Winter*: So likewiſe if we have any *Articboaks* at that time fit to cut, take them with all their Stalk, and ſet them in Sand in the ſame Place, which will preſerve them good a long time.

But we muſt take a very different Method to have *Colly-Flowers* in the *Summer*: About the 20th of *July*, or firſt Week in *Auguſt* at fartheſt, we muſt ſow the *Seeds* upon ſome decayed *Hot-Bed*, and tranſplant them about three Inches Diſtance, as ſoon as they have made their firſt *Leaf*, upon ſome other well prepared *Bed*. The Middle of *September* draw out every other *Plant* from that Plantation, and ſet them four or five Inches a-part, either under a *South*-Wall, to ſtand there till Spring, when they are to be planted out for Flowering, or elſe ſet them in the Places where they are to bloſſom, and cover them with *Glaſs-Bells* in the Severity of the *Winter*; and this laſt Method I think to be the beſt, becauſe they will be well rooted in the Spring, and conſequently be better able to make large Bloſſoms than thoſe that are planted in the Spring, and have the Difficulty of making new Roots when the others are growing.

Thoſe *Colly-Flowers* that are planted out at *Michaelmas* will flower about three Weeks ſooner than thoſe that are planted in the Spring; however, it is neceſſary to make Plantations in both Seaſons, that they may not all bloſſom at one time, but gradually ſucceed one another. An underſtanding *Gardener* will alſo make his Spring Plantation of *Colly-Flowers* at ſeveral times, allowing three Weeks or a Month between each; and by that means, (although all the Plants were raiſed at one time) the checking them at different Periods of Growth, will make them bloſſom earlier or later by two or three Months.

It is a Rule which ought to be obſerved, when we plant late in the Spring, (in *May* for Example) to ſet our *Colly-Flowers* where they may not have too much *Sun*. I have known ſome do very well between *Articboak Plants*, and in ſuch-like Places; and then it muſt alſo be obſerved that they have Water enough, for they are great Lovers of it. When the Bloſſoms begin to appear, break ſome of the great Leaves and lay over them, to keep the *Flowers* from Rain, and the ſcorching Heat of the *Sun*, which would make them turn yellow.

In *March* and *April* take care to ſhelter them from the Winds, which are very apt to damage them, and ſometimes blow them up by the Roots. I would adviſe, that if you have a good kind of *Colly-Flower* that bloſſoms early, and has large and cloſe *Flowers*, to let ſome of the forward *Plants* ſtand for *Seed*, carefully tying them to Stakes, that the Winds may not injure them. When the *Seed-Veſſels* are full grown, and the *Seeds* within them are perfected, cut off the whole Stalk, and let it dry in the Houſe before it be thraſhed out; for it is not neceſſary to leave the *Seed* upon the *Plants* till the *Pods* are dry, leſt they open and ſhed.

## SECT. IV.

## *Of* CABBAGES, *and their Kinds.*

WE have ſeveral kinds of *Cabbages*, the large *White Cabbage*, of which the *Gardeners* at *Batterſea*, in *Surrey*, have a kind that comes very early, and is the beſt for *Summer* Uſe: If it be ſown in *July*, and ſtands the *Winter*, I have known ſome of them ripen in *May*; or elſe, if we are minded to have of them ripe in the *Winter*, ſow them in *March*, and plant them out in *July*, at two Foot Diſtance, watering the Ground well before planting, if the Weather be dry. In the ſame manner alſo muſt be ſown and planted the *Savoy-Cabbages*, or *Savoys* (as they are called) for *Winter* uſe, for they are not good till the Froſts have pinched them. Theſe and all other kinds of *Cabbages* will put forth Sprouts from the Stalks, that towards the Spring are even preferable to the *Cabbages* themſelves, and will continue ſo to do till the Middle of *April*, about which time Greens of this kind are very ſcarce, and therefore young *Cabbage-Plants* and *Cole-worts*, that were ſown in *July* or *Auguſt*, are then the only Greens, except *Spinage*, that we have recourſe to.

When we have a right ſort of *Cabbage* to our Mind, we may plant it for Seed in the following manner: In *January* make choice of the dryeſt Part of the *Garden*; and having ſtripped ſome full-grown *Cabbages* of their looſe Leaves, plant them ſo deep in the Ground, that none of the Stalk appear above it, and then make up a Bank of Earth round about the *Cabbage* itſelf, ſo that none of it be ſeen but the Top, from whence the Flower-ſtems will begin to break in *March* or *April*, and then muſt be ſtaked up as the *Colly-Flowers*. The *Seed*, when it is full grown, muſt be gather'd, and order'd like that of the *Colly-Flower*.

## CHAP. V.

## *Of the* LEGUMES *or* PULSE, *ſuch as* BEANS, PEASE, KIDNEY-BEANS, &c.

SUCH as deſign to propagate *Beans* or *Peaſe*, muſt have a large Parcel of Ground; for 'tis not a ſmall Quantity will ſuffice to furniſh a very moderate Proportion of them; more eſpecially, becauſe they ſhould be ſown at different Seaſons: That from the Time they firſt come in, to the Beginning of *Winter*, we may always have a freſh Supply of young ones, as the former Crops decay.

### SECT. I.

### *Of* BEANS.

THE *Bean* has many Varieties; two Kinds of which I ſhall only make mention of, *viz.* the *Spaniſh Bean* for an early Crop, and the broad *Windſor Bean* for the *Summer*: The firſt of theſe are commonly put into the Ground in *November* or *December*, about five Inches apart, in ſome well-expoſed Place, commonly in a ſingle Line under a *South* Wall or Hedge, to ſhelter them from the ſharp Winds of the *Winter*; but I rather make choice of a Hedge than a Wall, for this Reaſon, that when the *Beans* are above Ground, and the *Froſt* takes them, the Wall will, when it is ſomewhat warm'd by the *Sun*, thaw them and the Ground where they ſtand, till Night comes on, and then they freeze again; and ſo if the *Froſt* laſts any time, they are continually harraſs'd in this manner, Night and Day, till they are deſtroy'd. But on the contrary, a Hedge ſhelters them from the ſharp Winds; and not reflecting any Heat upon them in the Day, as a Wall will do, the *Plants* remain in the ſame frozen State, till a general *Thaw* releaſes them, without undergoing ſuch violent Fits of Alteration, which muſt certainly impair their Parts.

If we have double Lines of theſe forward *Beans*, let not the Rows be nearer together than two Foot, for elſe they would ſmother each other when they come to grow up; and then, by running too much into Stalk, would produce but few *Bloſſoms* and leſs *Fruit*. It muſt be obſerved likewiſe, that if they have ſhot any conſiderable Length before the ſevere *Froſts* begin, they muſt be earth'd up within a little of their Tops; and in the Time of their *Bloſſoms*, cut off the Top of every *Bean-ſtalk*, to make them ſet their *Fruit* the better.

About *February*, we may ſet a ſecond Parcel of Ground with *Spaniſh Beans*, to come in after the former; and in *March*, plant ſome *Windſor Beans* for the firſt time, for they are tender, and cannot bear the *Froſts*. I have experienced, that if we ſet the Rows about a Foot aſunder, ſuffering them to grow till they are about five or ſix

Inches high, and then cut down every other Line within two or three Inches of the Ground, we ſhall then have a double Crop of *Beans* from the ſame Sowing, one coming in about *July*; and that which was cut down, ſpringing afterwards afreſh from the Roots, will have *Beans* about *Auguſt* or *September*. 'Tis therefore I would adviſe, that if it ſhould happen that two Crops of *Beans*, ſown at different Seaſons, ſhould by accident tend to bloſſom at the ſame time, as they often do, cut down one of them to have a late Crop.

'Tis alſo neceſſary to ſet *Beans* in *April* and *May* in moiſt Places, and then they muſt be allow'd a greater Diſtance between each other, than thoſe that were planted forwarder in the Spring; but above all, keep them clear of Weeds; and I think it would be good Huſbandry to water them about the time of their Bloſſom, if the Seaſon be dry. I have known likewiſe *Beans* planted in *June*, that have yielded a very good Crop late in the Autumn.

*Beans* love a ſtiff Soil, without any Manure: When their Seeds are full grown, the Plants may be pull'd up by the Roots, and ſet to dry in ſome well-expoſed Place, and then threſh'd out for Uſe.

## SECT. II.

## *Of PEASE.*

THE Kinds of *Peaſe* which I ſhall mention, are the *Hotſpurs*, for *Winter* Sowing; the *Dwarfs*, and the *Roncival*, or *Dutch Admiral*, to be ſown in the Spring: Theſe Sorts may well enough ſuffice for any *Garden*, without enumerating at leaſt fifty other Kinds that I have heard of; which perhaps are ſo near a-kin to theſe, that the Difference can hardly be diſtinguiſh'd but in the Names only. I have often wonder'd at the Indiſcretion of ſome People, who take delight in giving cramp Names to Plants, and make it their buſineſs to multiply Species without reaſon; as if a Fruit would be the better for a Name that could not be underſtood; or that the Works of Nature were not already numerous enough for us to contemplate: But to ſay no more of that vain Humour, which too many are ſubject to, I ſhall proceed to lay down what I have obſerved relating to the Culture of *Peaſe* in a *Garden.*

It is not one of the leaſt Perfections of a good *Gardener*, if he has Ground enough to provide ſo many Crops of *Peaſe* every Year, as may furniſh a Table throughout the whole *Summer.* About *November* or *December* is ſoon enough to ſow the firſt Crop; for if they were put into the Ground ſooner than thoſe Months, they would be endanger'd by the Froſts. Some of the *Hotſpurs* are the moſt proper for that Seaſon, to be ſown in *Drills*, each *Drill* about two Foot from the other, the Lines running from *North* to *South.* When they have ſhot about ſix Inches high, earth them up about four Inches on both Sides of the Lines, raiſing a little Bank on the *Eaſt* Sides of them, to defend them from the *Blaſts* which accompany the *Eaſt Winds.*

In *February*, a ſecond Crop of the ſame kind of *Pea* ſhould be ſown; and in *March*, we may put in a third of the ſame Sort. About the Beginning of *April*, ſome Ground may be prepared for ſowing ſome of the *Dwarf-Peaſe*, eſpecially the very ſhort Kind, which ſeldom riſes higher than half a Foot, or covers more Ground than ſix or ſeven Inches ſquare; and notwithſtanding the Smallneſs of this *Plant*, it will yield near as many *Peaſe* as one of the largeſt Kinds, and thoſe not inferior to any in their Taſte: Theſe *Peaſe* ſhould be ſet four or five Inches a-part, in Lines about eighteen Inches diſtant from one another, if they are deſign'd for Table-uſe; or if they are planted for Seed, the Lines need not be above a Foot a-part; for then there will be no occaſion to go between them, till they are ripe enough to be pull'd up.

Beſides this ſmall Sort, there is another kind of *Dwarf-Pea*, which riſes about a Foot high, a very good Bearer, and well-taſted: This Sort may be ſown thicker than the former, becauſe they carry their *Vines* more upright; but the Lines ſhould be two Foot a-part. In *April* theſe may be ſown, and in *May* or *June*, as well as the former, to have a conſtant Supply of young *Peaſe* following one another: The ſmalleſt Sort I have ſown in Edgings, and have gather'd great quantities from them; and I think them much the beſt for *Hot-Beds*, if we covet *Peaſe* in the *Winter*, as they take up but little room, and afford a conſiderable Crop. I am aſſured, one *Bed* of them will yield as many *Peaſe* as three *Beds* of the ſame ſize ſown with the common Sorts: For this end ſow them upon a gentle *Hot-Bed*, the firſt Week in *September*, about five Inches a-part.

The End of *April*, or Beginning of *May* is a right Seaſon for ſowing the *Roncival* or *Egg-Pea*, which is alſo called the *Dutch-Admiral:* This is the moſt rampant of all the *Pea* Kind, therefore requires more room than the others: Sow them about two or three Inches a-part, in Lines, planting two Rows within eighteen Inches of one another, and then leave a Space of four Foot for an Alley to paſs through when they are fit to be gather'd. Having allow'd this Paſſage, plant two Lines more, eighteen Inches a-part, and ſo continue to do, allowing the Breadth of four Foot for each Alley, till the whole Piece is ſown. When they are grown about ſix Inches high, earth them up like the others, and ſet two Rows of Sticks or Boughs about ſeven Foot high, to each double Line of *Peaſe*, for them to run up, and they will bear plentifully; which they never will do if they are ſet too cloſe together, or are not ſtaked up.

## SECT. III.

## *Of the KIDNEY-BEAN, or FRENCH-BEAN.*

WE have two Sorts of *Kidney-Beans* common in our Gardens; the one which bears early near the Root, without running high, call'd the *Batterſea-Bean*, and another Kind which is more rampant, growing near ſix Foot high, if it is ſtaked up. Beſides theſe, I have ſeen above fifty other Sorts that have been brought from foreign Parts, but ſeldom produce any quantity of Fruit in our Climate.

We ſow *Kidney-Beans* the firſt Week in *April*, in a light, freſh Soil, making *Drills* from *North* to *South*, laying the *Beans* in them about four Inches a-part, and covering them with Earth, raiſed in a Ridge to keep the Wet from them; for if the Ground be over-moiſt, it rots them.

The Lines of the *Batterſea-Bean* ſhould be two Foot a-part, and the other Kind ſhould be ſown after the ſame manner as I have preſcribed for the *Roncival Pea*, i. e. in double Rows, and Alleys between them two Foot and a half wide.

The *Batterſea* Kind need not be ſtaked; but the others will not bear well without they are ſtaked. From the firſt Sowing in *April*, we may once every three Weeks, till the middle of *July*, continue to ſow freſh Parcels of Ground with *Kidney-Beans* to ſucceed one another till the Winter comes in.

We muſt obſerve, that when the Ground is very dry, as in *June* or *July*, and the Weather likely to be hot, we muſt water the *Drills* as ſoon as we have opened them, before we put in the Seed, which will contribute to make them ſprout; but we muſt avoid watering them after they are ſown, leſt we rot them.

Out of Curioſity I have known ſome of the *Batterſea* Kind of *Kidney-Beans* ſown in *Hot-Beds* five Inches apart about the firſt Week in *September*, and they have had *Beans* fit to gather about *January*; but theſe, as well as other *Plants* of this nature, when they are forced, muſt have all the Air that can poſſibly be allow'd them, or the *Plants* will be apt to decay.

The *Wing-Pea*, when it is very young, is by ſome dreſs'd and eaten like *Kidney-Beans*, but in my Opinion is not near ſo good; the *Bloſſoms* indeed are of a beautiful Colour, and make a good Show in a *Garden*, if they are ſet in Edgings: It grows in any Soil without difficulty, if we put in the Seeds in *April*.

CHAP.

# CHAP. VI.

## *Of* SALLETS, *their* Culture.

AS the different Humours of Mankind will not allow me to preſcribe any certain Mixture of Herbs as the moſt pleaſant to the Palate, ſo I ſhall content myſelf with giving my Reader only ſome general Hints relating to the ſeveral Sorts of common *Sallet Herbs*, and leave every one to pleaſe himſelf in the Mixture of them.

I would have the Reliſh of the ſeveral Herbs conſider'd; as for example, which are moſt hot and biting, as *Creſſes*, *Muſtard*, *Cellery*, *Taragon*, *Chervil*, &c. and the more cool and inſipid to the Taſte, as *Turneps*, *Rape*, *Spinage*, *Corn-Sallet*, *Lettuce*, *Purſlane*, and ſuch-like: By this Knowledge a *Gardener*, when he compoſes a *Sallet*, may ſo judiciouſly mix his Herbs, that the too ſtrong Taſte of one Kind will not over-power all the reſt, and diſcreetly make uſe of the inſipid Sorts to qualify the Pungency and Heat of the others, as the Seaſon of the Year is more hot or cold; ſo that every *Sallet* we eat may not only be agreeable to the Taſte, but alſo a ſort of Phyſick to the Body.

I think where Seeds are uſed medicinally, one might raiſe young *Sallets* of them to be eaten with the common ſmall *Herbs*, and have the ſame Effect as the *Seeds* themſelves; but I ſhall now proceed to the Method of raiſing them.

SECT.

## SECT. I.

## *Of SMALL HERBS.*

WHAT the *Gardeners* call *Small Herbs* in *Sallets*, are ſuch as ſhould be always cut while they are in the *Seed-leaf*; ſuch are *Creſſes*, *Muſtard*, *Radiſh*, *Turnep*, *Rape*, *Spinage*, and *Lettice*; all theſe are commonly known to *Gardeners*, and are generally raiſed by them, from the Seeds ſown in *Drills* or *Lines*, about a Yard in Length, in ſuch an Expoſure, as the Seaſon of the Year requires; that is, from *Mid-February*, to the End of *March*, under Glaſſes and Frames; and from that Time, to the Middle of *May*, upon natural Beds of Earth, warmly expoſed; and afterwards, as long as the Summer Heats remain, in more ſhady Places. About the Middle of *September* and *October*, make your *Sallet-Beds*, as I have adviſed in *February* and *March*; and then, as froſty Weather begins to come in, prepare moderate *hot Beds* to ſow your *Sallets* upon, to be continued during the *Winter* Months; theſe ſhould have as much Air as poſſible, as well to give them Colour, as to help their Taſte. It ſometimes happens, when the Froſt is very violent, that the *Small Herbs* are frozen, notwithſtanding the greateſt Care, but I am told, That putting them into Spring-water for Two Hours before they are uſed, will recover them. I likewiſe find it is the beſt Way to draw the *Small Herbs* up by the Roots, from the *Hot-Beds*; for if the Roots are left in the Earth, when you ſow a ſecond Crop of *Salleting* upon the ſame *Bed*, it will not proſper. Alſo it ſhould be obſerved, in ſowing the ſecond Crop, that Seeds of the ſame Kind, ſhould not be ſown in the ſame Place, but eaſe the Ground with varying its Burden, putting the *Seeds* of hot *Herbs*, where the cool ones grew before; and this ought always to be obſerved in the *Culture* of every *Plant*, that we do not place them immediately upon that Spot where the ſame Kinds have juſt been growing. The moſt ſkilful *Farmers* and *Gardeners*, obſerve this Rule with that Exactneſs, that it ſeems as if one Kind of *Plant* meliorated and prepared the Ground for the Reception of another.

For the greater Perfection of our *Winter-Sallets*, it would be well to ſow ſome Lines of *Creſſes* in the natural Ground, about the Middle of *Auguſt*; for they will reſiſt the Froſts of the *Winter*, and help greatly to enrich our *Hot-Bed Sallets* with the high Taſte they acquire, by being expoſed in the open Air. Likewiſe at the ſame Time, ſow a *Bed* of *Chervil* for *Winter* Uſe, as well to mix among our *Sallet-Herbs*, as to put in *Soops*, *&c.*

## SECT. II.

### *Of* Sellery *and* Endive.

OUR *Winter Sallets* are likewiſe greatly improved by blanch'd *Sellery*, which is an hot *Herb*, of a very rich Flavour; it is raiſed from Seed ſown in *March* and *April*, in light Earth, in ſome well-expoſed Part of the *Garden*, and planted out about Six Weeks after it is come up, in Beds, allowing Four Inches Diſtance between the *Plants*; they may there remain till the Middle of *June*, at which Time, ſome of the firſt Sowing will be fit to plant in Trenches for blanching. The Trenches muſt be cut by a Line, Eight or Ten Inches wide, and about the ſame Depth, and as ſoon as they are made, put in your *Plants*, after having prun'd off the Tops and Roots of them:

They muſt not ſtand nearer together than Five Inches, if they are ſtrong; and as they grow large, earth them up within Four or Five Inches of their Tops, and ſo continue to do at ſeveral Times, 'till they are fit for Uſe. It is neceſſary to make Three or Four different Plantations of *Sellery* at ſeveral Times, one to come later than the other; and we may note, That theſe *Plants* will not be White 'till Six Weeks after they are earthed up; they love a light, rich Soil.

*Endive*, when it is blanched, is much uſed about *London* in *Winter Sallets*; though, in my Opinion, it is a Plant hardly worth our Trouble, as it has neither Taſte nor Flavour: It loves a light rich Soil, and ſhould be ſown about the latter End of *April*, leſt it run to Seed, as it is apt to do, if it is ſown too early in the Spring. When it has been come up about Six Weeks, plant it in Beds as I have directed for the *Sellery*, and about the Middle of *July*, plant it in Rows, about Six Inches a-part; and as ſoon as it is well grown, tie up ſome of it to whiten; and every Fortnight, as long as it laſts, tie up freſh Parcels of it.

## SECT III.

## *Of the* Cabbage Lettice.

WE have great Varieties of *Lettice*, many of which have been more eſteemed for their Rarity, than for their Goodneſs; but of all that I have yet tried, I find none to exceed the good Qualities in the *Roman Lettice*, the *Dutch Brown Lettice*, and the *Imperial* and *Sileſia* Kinds; all which Sorts cabbage extremely well, and are well taſted.

The *Brown Dutch Lettice*, if it be ſown about the Middle of *Auguſt*, will be fit to tranſplant in *September*, to ſtand the *Winter*, either for cabaging early in the Spring, or to be cut for *Winter Sallet*; it loves a rich light Soil, and warm Expoſure, as do all of this Tribe, eſpecially if they are ſown towards the Autumn. The *Imperial* and *Sileſia Lettices*, if they be ſown about the ſame Time with the former, and planted out in warm Places, will be very large, and be fit to cut very early in the Spring; but the *Roman Lettice* I have not known to bear the Froſts.

In *March* are commonly ſown all theſe Kinds in the open Ground among other Crops, as I have already hinted elſewhere: And that there may not want a conſtant Supply of them, ſow ſome every Month, from *March*, 'till you put in the *Winter* Crop, and plant them out in Beds about Five Inches a-part, Three Weeks after they come up; for tranſplanting them contributes to make them cabbage.

Such as produce large *Cabbages* early in the Spring, may be ſuffered to ſtand for Seed, and ſhould be ſtak'd up, leſt the winds annoy them; but the *Imperial* Kind will hardly run to Seed if the Crown of its *Cabbage* be cut croſs-ways, and carefully open'd, to give Way for the *Flower-ſtem* to ſhoot; and then likewiſe the *Plant* will be in Danger of rotting, if it ſhould rain, therefore fix a *Glaſs Bell* over it. The Seeds will be fit to gather as ſoon as they begin to ſhew their *Down*, and then pull up the *Plants*, and ſet them to dry in a *Green-houſe*, 'till you find the *Seed* is fit to be thraſhed out.

It is obſervable, That though the *Plants* we ſave the *Seeds* from were of extraordinary good Kinds, yet thoſe *Seeds* will degenerate from the *Mother Plant*, if they are cultivated in the ſame

*Garden* where they were ſaved: Therefore, if you can poſſibly meet with an honeſt Correſpondent, who gathers yearly the *Seeds* of ſuch *Plants* as you have occaſion for, change with him every Year, and you will both find your Advantage by ſo doing.

## SECT. IV.

## *Of* Burnet, Corn-ſallet, Purſlane, Sorrel, Spinage, *and* Taragon.

THE Contents of this *Section*, will be of the *Culture* of certain *Herbs*, which are often uſed in *Sallets*, and ſerve as Additionals to thoſe I have before mentioned. *Burnet* is a cool *Herb*, a perennial *Plant*, whoſe tender Leaves being, mixed with other *Sallet-Herbs* in the *Winter*, give us the agreeable Flavour of *Cucumbers*. It is propagated by *Seeds* ſown in *March*, and may likewiſe be encreaſed at that Time by parting the Roots.

*Corn-Sallet* is raiſed from *Seeds* ſown any Time of the Year, and makes a very good Sallet Furniture in the *Winter*.

*Purſlane* is an inſipid Herb to the Taſte, but very cooling, and is admired by ſome People in *Summer Sallets*: We have Two Sorts of it, the *Golden Purſlane*, and the *Green* Sort, which are both raiſed from *Seeds* ſown in ſome warm Place in *April*; or may be ſown earlier, if they have the Help of *Glaſſes*.

*Sorrel* is alſo uſed in *Sallets* eſpecially in the Spring; the young Leaves are very agreeable; it is raiſed from *Seeds* ſown in *March*, commonly in Rows or Drills.

*Spinage* I have already mentioned to be one of the neceſſary Ingredients in raw *Sallets*, to be cut in the *Ear-leaf*; but it is of far greater Uſe for boil'd *Sallet* in *Winter* and the *Spring*. The Beginning of *Auguſt*, it ſhould be ſown in ſome Place well expoſed to the Sun, that the *Leaves* may be large enough to cut for boiling in the *Winter*; and in *March*, *April*, and *May*, we muſt not fail to ſow ſeveral Parcels of Ground with it at different Times, about a Fortnight diſtant from one another, to ſupply the Table conſtantly, 'till other Greens are plenty; for in the Spring one Crop will hardly laſt good longer than a Fortnight, without running up to Seed. We have Two Kinds of it. The *prickly* Sort, and the *Round Spinage*, differing in the Shape of their Seeds, according to their Names; but I find no Difference in their Taſte when they are boiled.

*Taragon*, of all other Herbs, ſhould not be wanting in a *Sallet*, as it is a Cordial Herb, tho' the Taſte of it may not perhaps be ſo grateful to the Palate at firſt, as the common Herbs: For my own Part, I think it pleaſant, if there is not too much of it; a few Leaves, or Three or Four of the tender Tops, are enough to give a *Sallet* an agreeable Reliſh. This *Plant* loves a warm Expoſure, and is propagated from Slips taken from the Root, and planted in *March*.

In the Spring, *Dandelion* blanch'd, which may be gathered almoſt in every plough'd Field, is an excellent *Sallet*, being mixed with other Herbs. Some likewiſe gather *Violet* Flowers, *Cowſlips*, and the Bloſſoms of *Burrage*, as Part of their *Sallet* Furniture, and in the *Summer* the Flowers of the *Naſturtium Indicum*. In ſhort, whoever is once acquainted with the different Flavours of the ſeveral Herbs I have named in this Chapter, may eaſily pleaſe himſelf with a *Sallet*.

*N. B.* Whatever Seeds are ſaved or gathered, muſt be well dry'd and ripen'd before they are thraſh'd out; and then, after cleaning them, muſt be expos'd to the Air and Sun for a Week at leaſt before they are laid up, otherwiſe they will mold and rot.

## CHAP. VII.

## *Of POT-HERBS, and ſuch as are commonly uſed for* Diſtilling.

THAT I may not omit any thing that is proper to be done in the *Kitchen-Garden*, I propoſe to treat of ſuch *Plants* and *Herbs* in this Chapter as are commonly uſed for *Diſtilling*, and are ſometimes dry'd for the Uſe of the *Kitchen*; and, firſt, ſuch as are *Aromaticks.*

*Roſemary* and *Lavender* are both durable *Plants* and *Ever-greens*; they love a light ſandy Soil, and are both raiſed from Slips planted in *April*; quickly taking Root if they are Shoots of the laſt Year, but will not grow if they are older: They are apt to ſuffer by the Froſt, eſpecially if they have too much wet, and therefore ſhould be planted chiefly in the dryeſt Parts of the *Garden*, where they may be the moſt expos'd to the Sun. *Lavender* makes a fine Edging in large Walks, if it be often clipp'd; but for the ſake of its *Flowers*, which are often uſed, we muſt have a Plantation of it a-part; for were the Edging *Plants* ſuffered to flower, their Beauty would be ſpoiled.

*Thyme* and *Hyſſop* are either raiſed from Seeds ſown in *March* or *April*, or propagated from Slips planted in thoſe Months: We have many Sorts of *Thyme* of various Scents and Uſes; the *Pot Thyme*, *Lemon Thyme*, and a Sort with variegated Leaves, are moſt commonly cultivated, and make very good Edgings that will laſt ſeven or eight Years; And beſide them the *Maſtick Thyme*, and the *Marum Syriacum*, or *Cat Thyme*, are cultivated in many *Gardens* for the Sake of their refreſhing Odour; but the latter, if it is in ſmall Quantities, muſt be carefully defended from the *Cats*, who love to eat it, and are intoxicated with it; but I obſerve, where it is in Abundance, the *Cats* never diſturb it. Theſe two laſt Kinds ſhould be planted in the warmeſt Parts of the *Garden*, the others will grow any where.

*Sage* has many Varieties, but we propagate only three Sorts of it, *viz.* The *Red Sage*, the *Tea*, *Sage*, or *Sage of Virtue*, and the *Wormwood Sage*; theſe Kinds are raiſed from Slips taken from the Roots about the beginning of *April*, and planted a Foot a-part in light Earth. The *Sage of Virtue* ſhould be cut for drying when it is full of young Shoots, for thoſe only are fit to make *Tea* of; they ſhould be gather'd in a dry Day, about Noon, and laid to dry in the Shade to be preſerv'd for Uſe. I have been often told, that the *Wormwood Sage* is preferable to the former, affording a pleaſanter Liquor, and more grateful to the Stomach.

We ſeldom meet with more than two Sorts of *Rue* in our *Engliſh Gardens*, and their Difference only conſiſts in the Colours of the Leaves; the one being variegated with Cream Colour, and the other of a plain Green: This *Plant* delights in ſhady Places, and is eaſy multiply'd by Slips ſet in *April* in a light Soil. In Times of Peſtilence this *Plant* has been much in Requeſt, on a Belief that it prevents Infection.

*Mint*, or *Menth* and *Baum*, ſhould neither of them be wanting in a *Kitchen Garden*; they are propagated by parting their Roots any Time in the Spring, and will grow any where. *Mint* indeed is more generally cultivated than the other, as it is of itſelf a pleaſant *Sallet*, and good in *Soops*, and ſome *Sauces*, beſides its extraordinary Uſe in *Diſtilling*: When it is about a Foot high, it ſhould be cut to dry in Bunches for *Winter* Uſe; obſerving this, as a general Rule, To cut every *Herb* deſign'd for drying, in a dry Day, and then to dry them in the Shade.

Some *Gardeners* think it worth their while to plant ſome large Roots of *Mint* in the Corners of their *Hot-Beds* about *November*, that they may have young *Shoots* of it to mix among their *Winter Sallets.*

*Tanſie* is increas'd by parting the Roots in the *Spring*, and is a *Plant* ſo valuable, that it muſt not be wanting; ſome of it ſhould always be kept dry in the *Winter*, eſpecially for the Uſe of thoſe who are afflicted with the *Gout* in their *Stomach*: It is of that ſovereign Efficacy in that Caſe, as I have found by Experience, that I think I ſhould be guilty of ill Nature, if I was to paſs by this Opportunity of making known the Method of uſing it. Boil half a Handful of this *Herb* in half a Pint of ſtrong *White Wine*, and drinking this Decoction as hot as poſſible, I have always found it to remove the Pain in leſs than a Quarter of an Hour.

*Wormwood* is either raiſed from Seeds or Slips planted in *March*; it will grow in any Soil, and be apt to over-run the Ground, if it be eaten by Hogs when the Seeds are ripe, which paſſing through their Bodies, germinate, and come up very quickly.

*Penny-royal* and *Cammomile* are uſeful *Herbs*, and very well deſerve a Place in the *Garden*; they delight in moiſt ſhady Places, and proſper beſt in a ſtiff Soil; they are both propagated from Slips planted in *March* or *April.*

We have two Kinds of *Marjoram* commonly propagated in *Gardens*; one Sort called the *Winter Sweet-Marjoram*, which will reſiſt our Froſts, and remain good two or three Years, without renewing, and the other is ſown annually upon the *Hot-Bed* in *March*, not being able to defend itſelf from the Violence of our *Winters:* The firſt Kind is increaſed by planting the Slips about *March* or *April* in moiſt Places, but has not that agreeable Scent which we find in the other; therefore ſome of the laſt Sort ſhould be dryed every Year when it is grown pretty large.

*Carduus* is raiſed from Seeds ſown either in the Middle of *Auguſt*, or in *March*; but I commend the Autumn *Plants* before thoſe raiſed in the Spring, as they are much larger, and more vigorous than the others, and, beſides, have a much better Seaſon to dry in.

*Angelica* is raiſed from Seeds ſown in *March* in a moiſt rich Ground; it is a *Plant* that laſts good for ſeveral Years without renewing, and is of great Uſe.

*Dragons* ought alſo to be found in our *Garden*, as well for the Beauty of the *Flowers*, as the Uſe made of the whole *Plant* in many Caſes; it is multiply'd by tranſplanting the Suckers taken from about the Root in *March:* This *Plant* loves a freſh natural Soil and Shade.

*Fennel* and *Dill* are both propagated alike from Seeds ſown in the Spring; they are uſeful *Herbs*, and ſhould not be wanting in a *Garden*; the firſt, having its tender Stalks blanch'd like *Sellery*, makes a very good Sallet.

*Parſley* and *Clary* are alſo very uſeful Furnitures of a *Kitchen Garden*; they are both cultivated with great Facility, and raiſed from Seeds which ſhould be ſown in the Month of *March*, and renewed every Year.

I have now (I think) mentioned every *Plant* that is required to grow in a *Kitchen Garden*, and would adviſe, That the ſeveral Kinds I have treated of in this Chapter, be planted in ſome Place near the Houſe, for the Conveniency of gathering them with little Trouble when they are wanted.

## CHAP. VIII.

## *Of* ENGINES *for raiſing of* WATER, *with ſome Obſervations and Experiments for the meliorating of* Water *for the Uſe of* Gardeners.

AS it is impoſſible to have either a fine or profitable *Garden* without the Command of good *Water*, I am perſuaded this Chapter will not be unacceptable to ſuch Gentlemen as have their *Gardens* unfortunately ſituated remote from it; but eſpecially if by the Aſſiſtance of ſome *Engines*, which I ſhall here mention, they may be taught how to bring it, with little Trouble, to their Houſes or Gardens, although they have their Station upon the Tops of Hills, or other Places remote from *Water*.

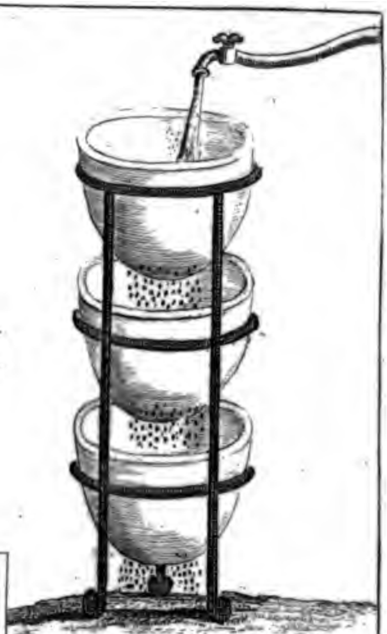
*Firſt*, Suppoſing the Situation of the Houſe or Garden to be a conſiderable Height above any Pond, River or Spring, and that it has, at preſent, no other Conveniency of *Water* than what is brought continually by Men or Horſes to it: In this Caſe, the wonderful Invention of the late

Mr. *Savory*, F. R. S. for raiſing *Water* by *Fire*, will not only ſupply the Defect, by flinging up as much *Water* as may be deſired, but may be maintained with little Trouble, and very ſmall Expence. It is now ſeveral Years ſince Mr. *Savory* ſet up one of them for that curious Gentleman, Mr. *Balle*, at *Cambden-Houſe*, which has ſucceeded ſo well, that there has not been any Want of *Water* ſince it has been built; and with the Improvements which I have ſince made to it, I am apt to believe will be leſs ſubject to be out of Order, than any *Engine* whatever.

For the Satisfaction of the Curious, I have given a Deſign of it, Fig. I. of the ſecond Plate, agreeable to that at *Cambden-Houſe*, which is, I think, the trueſt porportioned of any about *London*: The ſeveral Parts of it, and the Manner of Working it, I ſhall explain as follows.

A The *Fire*;
B The *Boiler*; a Copper Veſſel of a ſpherical Figure, in which *Water* is boiled and evaporated into *Stream*, which paſſes through
C the *Regulator*, which opens, to let it into
D The *Steam-Pipe* (of Copper) through which it deſcends to
E The *Receiver*, which is a Veſſel of Copper, that at firſt ſetting at Work is full of Air, which the *Steam* will diſcharge through
F The *Engine-Tree*, and up the *Clack* at
K (The *Plug* of the ſaid *Clack*, to come at and repair the ſame, if need be) and ſo the Air goes up
L The *Force Pipe*.——After E is void of Air; which is to be found by its being hot all over then ſtop the Steam at C, and throw a little cold Water on E, and the *ſucking Clack* will open at

I (Which



g. II.

Fig. III.

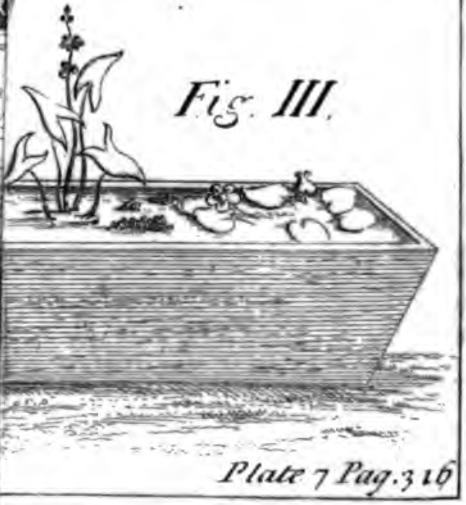


Plate 7 Pag. 316

I (Which is the *Plug* of the ſaid *Clack*) and fill
E with Water, which will aſcend through
G The *Sucking-Pipe*, from
A The *Pond*, *Well*, or *River*.

This being done, proceed to raiſe your *Water*, *viz.*

*Firſt*, Turn C to let the *Steam* paſs from the *Boiler* into E, and it will force the *Water* therein thro' F by K up L, which *Water* cannot deſcend, becauſe of the *Clack* at I. When E is thus emptied, which may eaſily be perceived by its being hot as before, turn C, and confine your *Steam* in B; then open the *Cock* M, which will let a little cold Water into E, and that by condenſing the *Steam* in E, will cauſe the Water immediately to aſcend from H, and repleniſh E.

Then turn C to let the *Steam* into E, and it will force the Water out of it up L into a *Ciſtern* O, placed at the Top to receive it. Then confine your *Steam* at C, as before, and turn M for the Space of a Second or two of Time, and E will be refill'd, which may be again diſcharged up L as before: So this Work may be continued as long as you pleaſe, if you keep Water in B.

If you turn the Cock N, and then only *Steam* comes out of it (without hot Water) the *Boiler* muſt be repleniſhed with freſh Water; but one *Boiler* of Water will laſt a long while.

When you have raiſed Water enough, and you deſign to leave off working the *Engine*, take away all the *Fire* from under the *Boiler*, and open the Cock N to let out the *Steam*, which would otherwiſe (were it to remain confined) perhaps burſt the *Engine*.

The Proportion of the ſeveral Parts of this *Engine*, as it now ſtands at *Campden-Houſe*, is thus:

The *Pipe*, from the Surface of the Water to the *Engine Tree* F, is ſixteen Foot, which is the Length it ſucks the Water (but might be made to draw Water about twenty-eight Foot.)

From the *Engine Tree* F, up to the great *Ciſtern*, which receives the Water, is forty-two Foot (but might be an hundred Foot high, if ſuch a Quantity of *Steam* be allowed as is proportionable to the Length of the *Pipe*.)

The Diameter of the Bore, as well of the *Sucking Pipe* G, as of the *Force Pipe* L, is three Inches; and of the *Steam Pipe* D, about an Inch.

The *Receiver* holds thirteen Gallons of Water, and the *Boiler* three times that Quantity.

When this *Engine* begins to work, you may raiſe four of the *Receivers* full of Water in one Minute, which is fifty-two Gallons; and at that rate, in an Hour's time, may be flung up Three thouſand One hundred and twenty Gallons, which is above Eighty-ſix Barrels: Or if there were two *Receivers*, one to ſuck, while the other diſcharged itſelf, as has been practiſed, then we might raiſe Six thouſand two hundred and Forty Gallons in the ſame time.

The prime Coſt of ſuch an *Engine* is about fifty Pounds; and the Quantity of *Coal* required for each Working, is about half a Peck; ſo that the Expence will be very inconſiderable, in compariſon to what the Carriage of Water upon Horſes would amount to; and in ſuch Countries were Wood is plenty, the Expence would be much leſs.

Now if the Quantity of Water which is here ſaid to riſe in an Hour's time, may not be thought enough for the Uſe deſigned, the ſame *Engine* may either be continued to work for four or five Hours, or another of a larger Extent might be ſet up. I have ſeen one with two *Receivers*, which held each of them a Barrel (*i. e.*) Thirty-ſix Gallons of Water, which would furniſh ſo great a Quantity, that even ſome tolerable large Fountains might be ſupply'd by it.

In the working this *Engine* we may obſerve two Things which contribute to explain the Motion of the *Sap* in *Plants*; *Firſt*, We diſcover the violent Elaſticity of *Steam* or *Vapour*, when compreſs'd or crouded into a little Room, as the *Steam* or *Vapour* riſing from the Roots of Plants into the fine *Tubes* or *Veſſels* in the Wood, has ſufficient Force to *unroll* or *explain* them at their Extremities, and by that Means to enlarge the Plant: *Secondly*, We may obſerve the Effect of cooling this *Steam*; it then *condenſes* or *thickens* into Water, which I ſuppoſe it does in *Plants*, as ſoon as it reaches their extream Parts and meets the Cold, and then returns to the Root through other Paſſages big enough to receive it, by means of its own Weight.

The *Perſian-Wheel* is another *Engine* which will draw Water from any great Depth: It is much uſed in *Italy* and other Parts of *Europe*, for drawing Water out of deep *Wells* and *Mines*. This *Wheel* has a Chain of Buckets, which in the Time of Working are continually filling and emptying themſelves: Some of them going down while the others are coming up, the Chain being looſe like that upon the Wheel of a *Jack*. This I ſhould farther explain, if it was not ſo generally known to every one that has been abroad.

As for other Inventions for the ſame Purpoſe of raiſing Water, I ſhall refer my Reader to the *Engines* themſelves; that at *Windſor-Caſtle*; the Engine at *Hampton-Court*; but above all others that I have yet heard of, for ingenious Contrivance, the *Engine* belonging to ——— *Louder*, Eſquire, of *Whitehaven*, which I am told is a conſiderable Improvement upon Mr. *Savory*'s Invention.

When by the Aſſiſtance of any of theſe, or other *Engines*, the Water is brought up to the Place deſign'd, it ſhould be expos'd to the Air as much as can be in a Pond, or other Receptacle of the like Nature, which is capable of containing a large Fund of Water, by which means it will be kept from fermenting ſo quickly as it would do in ſmall Quantities, confin'd in *Ciſterns* of *Lead* or *Wood*; and if it ſhould then happen that the Water is not palatable, or very fit for Houſhold Uſe, it may be remedied by ſome of the following Ways.

If it be muddy, or ill taſted, the Water immediately fallen from the Pipe of the *Engine* into the *Pond* or *Receiver*, ſhould firſt light upon a Bed of *Pebble-ſtones* three or four Foot thick; and the *Pond* or *Baſon* it is receiv'd into, after it is prepared to hold Water, ſhould be covered at the Bottom with the ſame kind of Stones. In that Part of the *Pond* where the Pipes receive the Water for its Conveyance to the Houſe, ſhould be laid a Heap of the ſame Stones over the Mouth of the Pipe; and at convenient Diſtances in the Courſe of the Pipes from the *Pond* to the Houſe, ſhould be made two or three ſmall *Ciſterns*, ſunk a Yard in the Ground below the Pipe, fill'd with the ſame Sort of Pebbles; and this Method will purify the Water to an extraordinary Fineneſs. The famous *Piſa* Water, ſo noted in *Italy*, is not without theſe Helps; but indeed it is obſervable, that the very Mountain it ſprings from produces thoſe *Olives* which make the ſweeteſt *Oil* in the World, which probably proceeds from the Nature of the Soil, as the Goodneſs of the Water alſo is partly owing to it.

But for want of theſe Conveniencies, we may refine Water another Way, as it is frequently practis'd in *Spain :* They filter it through ſeveral *Bells* or *Baſons*, made of a porous Stone of that Country, ſomewhat like thoſe dug about *Oxford*. Theſe *Baſons* are placed one over another, as in *Fig*. II. *Plate* II. ſometimes five or ſix, to make the Water as fine as you deſire; but for want of theſe, I think we might uſe large Baſons, of ſome ſort of Earthen-Ware made in *England*, and baked, without Glazing, which will let the Water paſs as freely as the *Bells* of *Stone*.

If it is too harſh, ſoften it with *Chalk* and *Gravel*; but above all we muſt obſerve, that no Water-Fowl be ſuffered to come near it, nor any Weeds or Fiſh live in it; and alſo that it is not annoy'd by Leaves of Trees falling into it.

And theſe Directions, I think, are not contrary to Reaſon, if we conſider, that the beſt, and the worſt Water, are only good or bad, according as they are filtred thro' *Beds* of different kinds of Earth; all Waters certainly partaking of the Qualities of the Earths they paſs through, as it were by Infuſion: It would, therefore, be well to obſerve, what Soils the beſt or moſt pleaſant taſted Springs run through, that others may be regulated by them: From ſuch Obſervations, an ingenious Man might eaſily alter the Taſte and Quality of any Water, according to his own Fancy.

But for the Uſe of *Gardens*, the moſt pleaſant clear Water is not to be preferr'd, nor ſuch as comes immediately from a cold Spring; neither ſhould it be harſh, but rather ſoft and muddy; A ſtagnating Water, that lyes well expoſed to the Sun, ſeems to be the beſt for the Health of any Plant; or pure Rain Water, if it can be had without any Mixture; for all inrich'd or fatten'd Water with Dungs, or other forcing Ingredients, proves often fatal to Plants, if not rightly underſtood; and at the beſt, can only contribute to make a Plant grow ſomething the quicker; and ſuch forcing of Nature always proves of ill Conſequence, as well to Plants, as to Animals, by ſhortening their Lives.

Indeed, where we have to do only with annual Plants, it may be of Service, to uſe ſometimes theſe Provocatives, the better to bring them to Perfection within the Compaſs of our *Summer*; but then they muſt be apply'd conſiderately, and a right kind of Mixture prepar'd for each reſpective Sort of Plant: For we muſt not imagine, that one ſort of Mixture, however fattening it may be, will alike contribute to the Welfare of every ſort of Plant. I have experienced, that the black Water taken from a Dunghil, will make a *Cabbage*, or any of that Race, proſper extremely: But having uſed the ſame Water to other Plants, that were Aromatick, and whoſe Texture of Parts was more cloſe, ſuch as *Myrtles*, *Thyme*, and the like, it killed them very quickly; which ſhews, that *Gardeners* ought not to confide in the Richneſs of any one particular kind of Water, for the Welfare of every ſort of Plant, no more than a ſkilful Phyſician, will preſcribe always the ſame Medicine, for the Cure of all ſorts of Diſtempers.

But there is another thing to be conſidered in the preparing of Waters for Plants, which as yet ſeems to be very little regarded; and that is, when we mix *Pigeons*-Dung, or other ſuch-like Ingredients in Waters, we muſt allow them due Time to ferment, before we uſe them, otherwiſe they will injure the Roots we water with them, and that will diſtemper the Plants, and it may be will kill them, as we often find by Experience.

Mr. *Evelyn* very juſtly obſerves, ſpeaking of theſe Mixtures, that they ſhould not be uſed, till they be ſufficiently ſweetned and purged from their own *Acrimony*: I have known many Plants deſtroyed by the Uſe of unripe Mixtures, although the ſame Preparations, when they have been fully maturated, have done Wonders in forwarding the Growth of the ſame kinds of Plants: And again, the Proportions of every Ingredient ought to be as reaſonably conſider'd, and not to double our Quantities over haſtily, becauſe a moderate Proportion has already began to ſhew its good Effects; like ſome unthinking People, who believe, that the more Phyſick they take, the more healthful they ſhall be, becauſe they have once been relieved from Sickneſs, by a ſmall Doſe of it: But a few Obſervations to an ingenious Man, who loves a *Garden*, will ſoon bring him to rights in theſe Matters.

I find that for *Orange-Trees*, *Sheeps* or *Deers* Dung ſteep'd in Water, about half a Buſhel to a Hogſhead, is of great Uſe, and may be fill'd up five or ſix times, without renewing the Dung; but this Water muſt not be uſed 'till it has ſtood at leaſt three Days in the Sun, for the firſt Time, and about Forty-eight Hours for the others: And beſides, we muſt likewiſe be ſure to obſerve, that when we have once begun to make uſe of it, it muſt conſtantly be continued, or the Trees will decline.

I confeſs, I cannot from Experience, direct any other prepared Water for the Welfare of any particular kind of Plant, but the *Orange-Tree*; but, ſo far as I can judge, thoſe Plants with the largeſt Veſſels, will beſt endure the fatteſt Waters: See the Mixtures I mention for forcing Vegetation, in the Third Chapter of my Firſt

Part of this Work, and infuſe them in Water for Trial.

But to return to plain Water, which is the moſt natural to Plants; Uſe only ſuch, if poſſible, as has ſtood in the Sun ſome Days to ſoften, either in *Ciſterns*, or Pits dug in the Ground: but I eſteem Pits to be the beſt; and even Water of this kind, ſhould not be unheedingly given to Plants. We ſhould then conſider the moſt proper Seaſons of doing it, and the beſt Method of refreſhing Plants with it.

Firſt then, we ought to water all Plants in the Morning, in ſuch Seaſons when the Nights are froſty; and in the Evening in the warm Seaſons: The Reaſon of the Firſt is, That too much Wet lying about the Roots of Plants, chills and pinches them ſo much, if it happens to freeze, that they often periſh; but if it be given in the Morning, when there is likelihood of a warm Day, it gives the Plants ſuch Nouriſhment as they require from it, and is dry'd up before the Froſt of the Evening can have Power over it; therefore Morning Waterings ſhould be in *Auguſt*, *September*, and *October*, *March*, *April*, and the firſt Fifteen Days in *May*; and from that Day to the middle of *Auguſt*, chuſe the Evenings for the ſame Work, becauſe then the extreme Heat of the Sun, would overheat the Water given in the Morning to the Plants, and ſcald their Roots, beſides drying it up too quick, before the Plants could receive due Nouriſhment from it: But we ſhould never uſe theſe Evening Waterings after the Sun is down, without great Neceſſity.

But in either of theſe Waterings, we ſhould take Care to water as near the Ground as can be, and not hold the *Watering-Pot* too high, for that would waſh the Earth from about the Roots of the Plants, and contribute to make the Ground hard, when the Sun comes to ſhine upon it, and ſo bind the Roots too much. Before you water, obſerve always, that the Earth be open and looſe about the Roots; and, above all, avoid, as much as can be, the wetting of the Leaves; for if the Froſt comes upon them before they dry, it pinches and rots them; and if the Sun ſhines hot upon them while they are wet, they will ſpot and change their Colour.

Beſides theſe ſimple Waterings, *Colly-Flowers*, *Cucumbers*, and thoſe Plants which have large Veſſels, ſhould be floated; that is, the *Alleys* between the Rows ſhould be dam'd up at each End, and fill'd with Water; and one of theſe Floatings will do more good, than ſix Waterings cloſe to their *Stems*; they feed and nouriſh the extreme *Fibres*, which alone want his Help, and put the Earth in that Condition, that the ſmalleſt Warmth of the Sun will evaporate the Steam from it, which I account to be ſo neceſſary to plump the parenchimous Parts of the Leaves and Stalks.

It is a Rule to be obſerved in watering of Plants, that while they are not growing, they ſhould be kept as dry as poſſible, and at the Time of their Growth, they ſhould never want Water, giving them frequently a little at a Time, and chiefly at the Time they are in Bloſſom; for if by Accident of Weather, the Water lyes long about the Roots of Plants, it chills them, and checks their Growth. It is alſo to be obſerved, that ſuch Plants as are very ſucçulent or jucy, as *Houſe-Leek*, &c. muſt have little Water; they contain Moiſture enough in themſelves for their Nouriſhment, and feed chiefly upon the Air, which they imbibe and condenſe in their ſpongy Parts; and beſides, for their Subſtance, they have fewer *Sap Veſſels* than any other kinds of

Plants; therefore, I have laid it down as a Rule, in my *Hiſtory of Succulent Plants*, and 'tis from Experience, that the more ſucculent any Plant is, ſo does it require leſs Water; and ſo thoſe Plants that have the greateſt Proportion of *Sap-Veſſels*, and the leaſt of ſpongy Parts, require frequent Waterings, which we find to be true from common Experience in the *Garden*, and by examining the Structure of *Water-Plants*, ſuch as *Willows*, &c. which are for the moſt Part compoſed of *Sap Veſſels*, and are, therefore, ſo tough, that they may be wrought into any Figure without breaking; but all jucy Plants are brittle for want of theſe Veſſels.

I believe, if we were to examine with the *Microſcope*, the Numbers and Sizes of the *Sap-Veſſels* in every ſort of Plant we have a mind to propagate, we might come to a Certainty of the Proportion of Moiſture every Plant required.

Since I have now given my Remarks upon Water, and the manner of uſing it in *Gardens*, I believe it will not be unacceptable to the Curious, if I give them an Account of the Method I have uſed to progagate *Water-Plants*, in *Pots* and *Caſes*, which hitherto I believe has not be practiſed in *England*, by any but myſelf, and is what I find to ſucceed very well.

## CHAP. IX.

### *Of* WATER-PLANTS, *whether* Domeſtick *or* Foreign, *the Manner of propagating them in our Gardens.*

IN the Firſt Part of this Work, I have taken ſome ſhort Notice, that we have *Terrene* Plants, *Amphibious* Plants, and *Aquaticks*; but I ſhall now be more particular concerning the latter, and endeavour to ſhew how far the right Diſpoſition of each of them ought to be conſider'd, when we are about to propagate them. I am perſuaded, many curious Perſons would have made Plantations of *Water-Plants* in their *Gardens* long ſince, if they had known how to have done it, as the beautiful *Flowers* of ſome of them at leaſt equal, if not ſurpaſs, many of our moſt curious *Land-Plants*, and that chiefly in the *Weſt-Indies*; altho' *England* has alſo its Share, witneſs the *Water-Lillies*, and *Ranunculuſes* of different Kinds, ſo frequently found in *Rivers* and *Ponds*.

Now that *Water-Plants* may have their Place in *Gardens*, even although there are neither *Ponds*, *Rivers* or *Springs*, to plant them in, I ſhall recommend the following Method, which I have experienced with good Succeſs. Firſt, provide either large *Garden-Pots* glazed within-ſide, and without Holes in their Bottoms, or elſe cauſe ſome Troughs of Wood to be made, according to the third *Figure*, *Plate* II. of *Oaken Boards*, about two Inches thick; ſuch Caſes ſhould be ſix Foot long, two Foot wide at the Bottoms, and two Foot and a half deep, if they are for large *Plants* that grow under Water, or ſhallower for ſuch as do not require deep Waters; the Corners and other Joints of ſuch Caſes, ſhould be ſtrengthen'd with Iron, the Inſides well pitch'd, and the Out-ſides painted. In theſe *Pots* and *Caſes* put common unmix'd Earth, ſo much as to fill one third Part of them, for *Water-Lillies*, *Pond-Weeds*, or ſuch others as require Depth of Water for their Leaves and Branches to ſwim in; and fill about two Thirds of them with the like Earth for *Water-Plantains*, *Water-Aroms*, and *Ranunculuſes*, which love leſs Depth of Water than the former; then for thoſe *Plants* which grow in *Marſhes* and *Bogs*, the Earth may lye within five Inches of the Top. This Work may be done in *April*, when the *Water-Plants* begin to appear, which may be brought in and planted from that Time 'till the middle of *June*, filling up each *Pot* or *Caſe* with Water as ſoon as the *Plants* are put in them. It muſt be obſerved likewiſe, that many of the *Water-Plants* are Wanderers, without taking any Root in the Earth; ſuch as the *Water-Soldiers*, *Frog-Bits*, and *Ducks-Meat*, which ſwim about from Place to Place, as the Wind carries them, and only ſtrike their Roots into the Water; therefore, a ſmall Quantity of Earth at the Bottoms of the *Pots* they are ſet in, will ſuffice to maintain the Water in a right State for their Support. In a word, to obſerve the Mode of Growth, and the Expoſure of thoſe *Plants* we collect, will beſt help us to underſtand the right Way of cultivating them with Succeſs, when we are about to civilize them in our *Gardens*; where in all Things the plain Road of Nature ſhould be followed, or at leaſt kept in View, if we deſire healthful Plants.

I find that in this artificial Management of *Water-Plants*, thoſe of *Rivers* ſhould be frequently refreſh'd with Spring-Water, and ſuch as delight to grow in ſtanding *Pools* or *Ponds*, to be ſeldom interrupted with it. It is alſo obſervable, that *Water-Plants*, upon removing them, will be as long before they recover themſelves, to renew their Growth, as *Land-Plants*, which may ſeem ſtrange to ſome, who are uſed to ſee the ſudden Refreſhment of a decay'd *Land-Flower*, when it is put into Water. And whereas it is a common Thing, to ſhelter *Land-Plants* from the Heat of the Sun after tranſplanting, *Water-Plants* muſt be dealt with directly contrary, and be expoſed to the Sun after they are removed.

The *Seeds* of *Water-Plants* are of two Kinds, one Claſs always ſwimming on the Top of the Water, and the other ſinking to the Bottom, as ſoon as it is ſhed, following the Nature of their Mother Plants in that reſpect: For if the Seeds of thoſe Plants, which naturally ſwim on the Top of the Waters, ſhould ſink to the Bottom, ſuch Seeds would then be removed from the proper Station requir'd for their Growth, and would therefore periſh: And ſo likewiſe the Seeds of thoſe Plants, which Nature directs to grow under the Water, will not ſwim on the Top of it. As for the Preſervation of their Seeds, to ſupply us with ſeveral Kinds from Year to Year, which, without doubt, will produce as many Varieties, as the Seeds of Land-Plants, I ſhall preſcribe the following Method, which may be uſeful for the Tranſporting them from remote Parts, or foreign Countries, which may be done more eaſily in Seeds, than in Plants already grown.

In order to ſave the *Seeds* of theſe Plants, we have no more to do, than to follow them from the Flower 'till they are ripe, and then to put them in

Earth and Water, to preſerve them from Vegetation the Spring following, for Nature takes that Way, and in this there is no Difficulty. The *Pots* and *Caſes* I have already directed, are proper to put them in as ſoon as they are gathered; then let them ſink or ſwim in the Water 'till the Spring cauſes them to ſprout, they will proſper with little Attendance; but, indeed, if we can be happy enough to meet with an ingenious Correſpondent in any Part of *America*, where the Waters ſo generally are adorned with beautiful *Plants*, we muſt contrive ſome particular Method to preſerve them during their Tranſportation; and for their Culture when we receive them, ſuch as putting them (each Sort by itſelf) in Bottles of Water and Earth, with large Mouths, covered only with Linen Cloth, and not with Corks, which would cauſe a Ferment in the Liquors; place thoſe Bottles in ſome Veſſel of Water, 'till they can be brought to us, and then ſow them in the Pots, prepared as I have already directed, for *Plants* of this Nature, and place them in *Hot Beds*, 'till the Weather with us will nearly anſwer the Heat of the Climate they came from. At the gathering their *Seeds*, ſtrict Obſervation ſhould be made of the Depth of Water they grow in, the Situation, the Quality of the Soil under the Water, and whether they inhabit running or ſtanding Waters; and above all, the Taſte of the Waters they grow in, whether ſalt, brackiſh, or freſh, ſhould be obſerved: By ſuch Inſtructions, I think it will be impoſſible to fail of the Succeſs we deſire.

When we have collected a ſufficient Variety of *Water-Plants* into our *Gardens*, we may prepare to diſpoſe them in *Claſſes*, and range the ſeveral Tribes in proper Order, which would be very uſeful to ſuch as read *Lectures* on Plants; for indeed, the Want of ſome ſuch Way as this, for the cultivating of *Aquaticks* in a narrow Compaſs of Ground, has given the Students in *Botany*, the greateſt Trouble in their Studies, and has been the Occaſion that *Water-Plants* are ſo little known. The moſt proper Seaſon for diſpoſing and removing them, is as ſoon as they are out of Flower, and the Leaves begin to decay, which is about the Beginning of *September*; their *Stems* or *Branches* muſt then be cut off near the Root, and their Roots planted at due Diſtances, in the *Pots* or *Caſes* already deſcribed.

The *Water-Lillies*, which I ſo much commend for their Beauty, are of ſeveral Kinds, the *Double White*, the *ſingle White*, the large *ſingle Yellow* flowering Sort, and the *ſmall Yellow*. And beſide theſe, I have heard of other Sorts of them in *England*, but have not yet found them; the large Kinds bloſſom in *June* and *July*; that with the yellow Flower ſomewhat ſooner than the others: We may find them in quiet Waters, as in a *Pond* at the Back of *Twickenham*, where I have gather'd three Sorts; but the yellow Sort eſpecially, is very plentifully in the River of *Thames*, about *Brentford*, where there are many other pretty Sorts of *Water-Plants*.

In the Ditches about *Lambeth*, and near the *Neat-Houſes*, *Weſtminſter*, I have obſerved great Varieties of *Water-plants*, as alſo near *Hampſtead*, and upon the Banks of the *Thames*, over-againſt *Greenwich*; but I am told, there are not in any Place in *England*, ſo many different Species as in *Cambridgeſhire*, which abounds ſo much in curious *Plants*, that the famous Mr. *Ray*, thought it worth his while, to compoſe a Volume, on purpoſe to deſcribe the Plants of that County only. So that ſuch as covet to propagate *Water-Plants*, may eaſily ſtock themſelves with Varieties enough, which I ſhall never believe are leſs uſeful or beautiful,

tiful, becauſe they are not ſo high-priced, as many others.

I ſhall now ſay little more upon this Head, unleſs it be, that we muſt ſhelter ſuch *Water-Plants* as we receive from foreign Parts, in the *Green-Houſe*, during the Winter; for it may be, in that Seaſon they will flower with us; if they, like the *Exotick Land-Plants*, preſerve ſo far their natural Seaſon of Growth, that they will only ſprout in the Spring-Time of their native Countries. During their Confinement in the Houſe, they muſt be often refreſh'd with Water, ſomewhat warm'd by the Heat of *Horſe-Dung*, or the *Sun*, and allow'd as much Air as poſſible.

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### OF THE

# GREEN-HOUSE,

### AND

# EXOTICK PLANTS.

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## CHAP. I.

### *Of the* Green-Houſe, *or* Conſervatory; *with Directions for ſowing* Exotick Seeds, *and the beſt Method of gathering them Abroad for Tranſportation, and the Manner of packing them up.*

AS there is nothing more difficult in the Management of *Exotick Plants*, than the right underſtanding of the *Conſervatory*, where they are to ſtand in the *Winter*, ſo I think it neceſſary in this Chapter to preſcribe ſuch Rules for the building and ordering of *Green-Houſes*, as I have found to forward the Welfare of *Plants*, and as yet have been but little regarded or underſtood.

The *Green-Houſes*, as they are commonly built, ſerve more for Ornament than Uſe; their Situation to receive the *South-Sun*, is the only Thing that ſeems to be regarded towards the Health of the *Plants* they are to ſhelter: It is rare to find one among them that will keep a *Plant* well in the *Winter*, either by reaſon of their Situation in moiſt Places, their want of *Glaſſes* enough in the Front; the Diſproportion of the Room within them; and ſometimes, where it happens that a *Green-Houſe* has been well conſidered in theſe Points, all is confounded by the *Flues* under it, which convey the Heat from the *Stoves*.

From the Experience therefore that I have had in the Culture of ſeveral Thouſands of *Exotick Plants* in different Kinds of Conſervatories, I ſhall venture to give my Sentiments of the Matter.

Beſides what is commonly called a *Green-Houſe*, it has been cuſtomary to provide *Glaſs-Caſes* of ſeveral Kinds, and *Stoves*, for the Preſervation of *Plants* brought from different Countries; but I now find they are ſo many unneceſſary Expences, unleſs in the Caſe of ſome *Plants*, which are brought from the hotteſt Climates: A good *Green-Houſe*, well contrived, will do all that is required for the Welfare of moſt *Plants* in the *Winter*: It may be ſo order'd as to ſhelter at one time *Orange Trees*, *Plants* from the *Cape of Good Hope*, *Virginia*, *Carolina*, and indeed ſuch as grow within ten Degrees of the *Line*. I muſt confeſs, when I was firſt acquainted with *Aloes*, *Indian Figs*, and ſuch like *Plants*, I thought they could never have Heat enough, and deſtroyed many by that too common Notion: I could hardly venture them out of *Hot Beds* in the moſt extreme Heats of the *Summer*; and in the *Winter* they were half roaſted with the ſubterraneous Fires I had made under the Glaſs Caſes where they ſtood.

But the great Inconveniencies I found by that Practice, put me upon making other Tryals; I was ſoon convinced they would live in the open Air in the *Summer*; and I found, that by bringing them acquainted with it in that Seaſon, they became more hardy to reſiſt the Cold of the *Winter*; they were then vigorous and healthful, and I had no more to do in the moſt rigorous Seaſons, but to keep them from the Froſts, and ſo to diſpoſe the *Conſervatory*, that when they came to be ſhut up in ſevere Weather, there might be Air enough enclos'd in the Houſe to circulate freely about the *Plants*, and dry up thoſe Damps which are, at ſuch Times, apt to riſe from the Moiſture of the Pots of Earth; for thoſe Damps I found commonly had the worſt Effects upon *Plants*, by bringing Mouldineſs upon their Leaves or Stalks, which always rotted them, unleſs timely prevented. To correct theſe, as well as prevent the Froſts from geting into the Houſe in very violent Seaſons, I made uſe of a little *Charcoal Fire*, after it burnt clear, and had done ſmoaking, which I hung up between the Windows and the *Plants*. One of theſe Fires would keep the Air in the Houſe warm and dry for about Twenty-four Hours, without renewing; and this Method I found had a much better Effect upon the *Plants* than the ſubterraneous *Fires*, which commonly rais'd Damps, crack'd the Paſſage of the *Flues* where it run, and often fill'd the Houſe with Smoak, which is a great Enemy to *Plants*, eſpecially the Smoak of the *Sea-Coal*.

Now although I found ſo much Benefit by *Charcoal Fires*, that in the hardeſt Winter I did not loſe one *Plant*, yet even thoſe Fires are not without their Inconveniencies; where there are many of them, they are ſo ſuffocating that ſeveral Men have been choaked by them upon going into the Places where they have been burning; and if they be not made to burn clear, before they are put into a Houſe, the Sparks will fly in ſuch great Numbers from the burning Coals, that the Houſe would be in Danger from them of being ſet on Fire.

Theſe Inconveniencies indeed are enough to leſſen our Eſteem for *Charcoal Fires*; but it depends upon the Care of the *Gardener* that he avoids thoſe Dangers, by putting into his *Green-Houſe* only a ſmall Fire or two, in Proportion to the Bigneſs of the Houſe, and by taking Care when he puts them in, that they are rather declining, than increaſing in their Heat.

Since I have ſeen ſome of the new-invented *Chimneys* ſo judiciouſly improved by my learned and ingenious Friend Dr. *Deſaguliers*, F. R. S. I am of Opinion, that nothing can be contriv'd more for our Purpoſe of preſerving *Plants* in the *Winter* from Froſts and Damps, than one of them plac'd artificially in ſome Part of a *Green-Houſe*; they will afford us all that we can deſire from an artificial Heat, for the Welfare of *Exotick Plants*, without any Inconvenience attending them; and neither the Trouble nor the Expence of Firing will be near ſo great as in the preparing of the other Fires I have mentioned; and the Expence perhaps not exceed the Charge ſome have been at in making and continually repairing *Stoves*, which are frequently out of Order, beſides the double Advantage we may have from one of them, by ſetting it up in ſome Room joining to the *Green-Houſe*, where although a Fire may be kept conſtantly, yet the Heat may be let into or kep out of the *Green-Houſe* at pleaſure; and that in ſuch Proportions, as to make the Air in the *Conſervatory* equal to the

Warmth of any Climate we have a mind to imitate, which we may judge of, by placing a *Thermometer* in ſome Part of the *Green-Houſe:* By Means of this Invention, the Air in the Houſe will be put in Motion, kept dry and warm, and correct the Damps; the Houſe will be repleniſh'd with freſh Air, as we ſee Occaſion; there will be no Danger of Smoke, or the Charge of frequent Repairs: So that conſidering all theſe Excellencies, I cannot conceive that any Invention can exceed this for the Preſervation of *Exotick Plants* in the Winter. We may ſee a farther Account of theſe *Chimnies* in the Book publiſhed by Dr. *Deſaguliers*, call'd, *Fires improv'd.*

From hence we may judge that a good *Green-Houſe* ought to be ſituated upon the dryeſt Ground, to be as free from Damps as poſſible; we ought alſo to provide ſubſtantially for the keeping out of Cold, and yet, upon Occaſion, to let in Air freely, but chiefly to contrive that the Front of the Houſe be ſo diſpos'd, that nothing may obſtruct the Paſſage of the Sun's Rays in the Winter into the Houſe.

I ſuppoſe every one will allow, that the *South Aſpect* is the beſt for a *Green-Houſe*, as it will in that Expoſure receive the Sun for the greateſt Part of the Day; but in caſe that cannot be had with Conveniency, the *South-Weſt Aſpect* is next to be coveted. I think it would be pleaſant, as well as beneficial to *Plants*, if the *Conſervatory* was always join'd to the Dwelling-Houſe: Can there be any thing more agreeable in the *Winter*, than to have a View from a *Parlour* or *Study*, through Ranges of *Orange-Trees*, and curious *Plants* of foreign Countries, bloſſoming, and bearing *Fruit*, when our *Gardens* without Doors are, as it were, in a State of Death, and to walk among thoſe Curioſities of Nature as in the moſt temperate Climate, without any Senſe of the Froſt or pinching Cold that reigns Abroad? And beſides, there is this Convenience in the joining the *Conſervatory* to the Houſe, that in cold Weather, we may go into it without letting in the cold Air, or blighting Winds from Abroad, which would injure the *Plants.*

The Situation of the *Green-Houſe* being thus fix'd upon, the Proportions of the Building muſt next be conſider'd, and that chiefly in relation to the Heighth and Breadth of the Room; for the Length of the *Green-Houſe* may be more or leſs, according to the Fancy of the Owner: But for the better Admiſſion of the Sun's Rays to paſs all over the Houſe, the Breadth of it ſhould not be more than the Height from the Floor to the Ceiling, which may be from ten to eighteen Foot.

The Walls toward the *North* and the *Eaſt*, muſt be of a good Thickneſs, but the Front towards the *South* ſhould be all of *Glaſs*, excepting a low Wall about a Foot high from the Ground; there ought to be no Peers of Brickwork in the glazed Part, for they caſt more Shade into the Houſe, in Proportion to their Bigneſs, than it can receive Light through the *Glaſs*; and every one that underſtands *Exotick Plants*, I am ſure will allow, that they ſhould have all the Advantage of the Sun's Rays in the Winter, that they can poſſibly receive; and for this End, it would be uſeful in the colder Parts of *England*, to build the Front of the *Green-Houſe* in a Sweep, after the Faſhion of a Semicircle, which would then receive the Rays of the Sun from the Time of its riſing 'till it ſets.

The *Glaſs* in the Front, whether it be in *Saſhes* or *Caſements*, muſt be ſo contrived, that it may either be made to ſlide quite below, or above the Frames, or to be taken away as there is Occaſion to give Air to the *Plants*, which for about a Fortnight or three Weeks after they are ſet into the Houſe, and as long before the *Plants* come Abroad, ſhould be quite open, Night and Day, if the Froſts or blighting Winds are not Abroad; but at other Times, while the *Plants* are within Doors, all the *Glaſs* ſhould be put up, and only opened with Diſcretion in the Day-time to air the *Plants:* The *Saſhes* or *Caſements* being open'd more or leſs, in Proportion as the Weather is cold or warm, and ſhould be always ſhut cloſe again before the Sun is off the Houſe, that the Air in it may keep warm till the next Day. Some have practiſed with good Succeſs, to lay the Windows of their Conſervatories ſloping about Ten Inches; but as far as I have experienc'd, they will do as well upright. The Door ſhould be in the Middle of the Front, and at leaſt Four Foot wide, to admit large *Plants*; it ſhould be glazed like the Windows.

To theſe we muſt provide ſtrong Shutters, at leaſt an Inch thick, which in the Winter-time ſhould be ſhut every Night for fear of Froſts, and alſo in extraordinary cold Weather, when violent Winds blow right againſt the Houſe.

For the better Security of the *Plants* from Cold, a Place for the laying up the *Gardener's* Tools may be built at the Back of the *Green-Houſe*, and over it a *Fruitery*, or *Seed-Room*; or in lieu of the latter, fill the Roof full of dry Straw.

The beſt *Pavement* is that made with Square *Tiles*, which ſuck up Wet quickly, and never ſweat, as *Marble*, or ſuch kind of hard Stone uſually does: And for the Lining of the Walls, nothing is preferable to the *Dutch glazed Tiles*, which are ſoon warmed with the Sun, and reflect a great Heat into the Houſe.

A *Green-Houſe* being built anſwerable to theſe Directions, after it is well dryed, may receive Plants into it; but nothing injures them more, than to ſet them in a damp Houſe. In the placing them in the Houſe, we muſt obſerve the following Particulars.

It is commonly practiſed to provide Rows of Shelves placed one higher than the other, from the *Eaſt* to the *Weſt* End of the Houſe; theſe ſhould be made to hold as many Pots with Plants, as will fill up about One fourth of the Space in the Houſe, leaving the reſt for Air, to circulate about the *Plants*, when they come to be ſhut up cloſe in Froſty Weather: For if the Houſe was to be crowded with *Plants* in the *Winter*, their too great Numbers would create Damps, by condenſing the Air in the Houſe; but a Quantity of *Plants* proportionable to the Space of the Houſe, as I have already hinted, cannot over-power the Air in it, ſo far as to produce thoſe Damps. It is obſervable, That in Countries which abound in Wood, great Rains are very frequent, which ſeems to inform us, that the cold Nature of the many Trees there growing, and alſo the Coldneſs of the Earth under the Trees, condenſe the Air, and by that means breed Rain more than other Places that are not over-burthen'd with Woods.

In the diſpoſing of the Shelves in the *Green-Houſe*, I allow One third of the Floor for them to ſtand upon; One third from the firſt Shelf to the Windows, and as much from the laſt Shelf to the Back of the Houſe; ſo that we may walk round the *Plants*, which being placed in the middle Line of the Houſe, are ſafe from the extreme Cold, which is generally nearer the Walls or Glaſſes.

Between the Windows and the firſt Shelf, at one End of the Houſe, ſhould be built the *Chimney* for warming the Air, and the Heat made to come from it into the Houſe, about a Foot above the Floor, which will riſe afterwards, and ſpread itſelf over the whole. Near the Place where this Heat comes in, place the moſt tender *Plants*, and, by degrees at greater Diſtance from it, the moſt hardy. We may beſt judge of the Nature and Temper of the *Plants*, by conſulting what Climates they were brought from: As for Example; Thoſe which come from Countries near the Line, muſt have the warmeſt Place; if they grow on this Side the Line, their Spring begins about the ſame Time with ours; but if they were brought from the *South*-Side of the *Line*, then their Spring begins about *Auguſt*. All *Plants* of the *Cape of Good-Hope*, and other Parts beyond the *Line*, ſuch as *Aloes* of thoſe Countries, *Ficoides*, and ſuch like, flouriſh moſt with us from *Auguſt*, 'till the End of *November*, 'till the Cold of our *Winter* checks their Growth.

All ſeedling *Plants* from hot Countries, which we raiſe in the Spring upon *Hot-Beds*, ſhould be uſed to the Air as much as poſſible, when they are once come up; for elſe they will hardly ſtand the *Winter*, though they are ſet in the warmeſt Part of the *Green-Houſe*; but there will be little Danger of loſing any of them, after they have been preſerved Twelve Months, and have had the Tryal of all our Seaſons.

I obſerve, That the *Plants* which I have raiſed from *Seeds* brought from *Jamaica*, *Barbadoes*, *St. Chriſtopher*'s, and from others of the *Carribbee-Iſlands*, are the moſt tender and hard to be kept: But I am perſuaded, a Houſe built after the Manner I have directed, with the Addition of one of the *Chimneys* I mention, would keep them, or almoſt any other, with very little Trouble.

*Plants* from *China* are indifferently hardy, as well as thoſe from *Perſia*; and I find that moſt of thoſe brought us from the *North* of *Carolina* and *Virginia*, whoſe Seaſons are but a little earlier than ours, and the Difference of Latitude not more than Twenty-five Degrees *South* from *London*, may be naturalized, without Difficulty, to our Climate, after they have been ſhelter'd for two or three *Winters* with us; witneſs that Wilderneſs of *Exotick Plants*, which that wiſe Encourager of Natural Learning, Dr. *Compton*, late Biſhop of *London*, cauſed to be planted in his *Garden* at *Fulham*, and have proſper'd ſo well without Shelter for ſeveral Years.

The Time for ſetting *Exotick Plants*, into the Houſe, is about the ſecond Week in *September*; and the Middle of *May*, if the Froſts are paſs'd, they are commonly brought out of the Houſe: But altho' this is become a general Rule (in a manner) among the *Gardeners*, we muſt yet take this Caution with us, that all Plants are not alike tender; *Orange-Trees*, and moſt Plants of *Virginia* and *Carolina*, are indeed, rightly ſet in and out of the *Green-Houſe* at thoſe Times; but *Myrtles* may come abroad ſooner by fifteen Days, and remain out of Doors 'till the Middle of *October*. Again, *Aloes* ſhould not be brought out of the Houſe till the firſt Week in *June*, and ſet in again about the laſt Week of *Auguſt*; and ſuch *Plants* as live neareſt the *Line*, ſhould yet be more confin'd to the Houſe, than any I have yet mentioned: But concerning the houſing and bringing abroad of all Sorts of *Exotick Plants*, we muſt be ſure to obſerve this general Rule, *i. e.* That they muſt be perfectly free from Wet on their Leaves and Branches, when they are ſet into the Houſe; and we muſt always bring them abroad, if poſſible, with the Advantage of a gentle Shower to waſh and refreſh their *Leaves*.

It next follows, that I deſcribe the Manner of raiſing *Exotick Plants* from *Seeds*, and that ſhould be done in this Manner: When by Means of Correſpondents in foreign Countries, or the Help of curious Perſons at Home, who have by their Induſtry collected the *Seeds* of Foreign Novelties, we are provided with a Collection of *Seeds* from any Hot Country, we muſt preſently prepare a *Hot-Bed* for them; and while it is ſettling itſelf for Uſe, ſow the *Seeds* in *Pots* ſeparately, marking every Sort, that, when they begin to come up, we may the better know what we are to expect. When they have made their firſt *Leaves*, plant them out in other *Pots*, and give them a freſh *Bed*, when the firſt is cool, and as ſoon as the ſecond begins to decay, uſe them to the Air in the Day-time, to harden them for the *Winter*: If by Chance all the *Seeds* we ſow do not come up, keep the *Pots* they were ſown in 'till the Spring following in the *Green-Houſe*; for many *Seeds* will lye in the Ground till the ſecond Year without ſprouting, as I have often found, and they always prove to be *Trees*.

And that we may with the more Certainty propagate ſuch *Exotick Plants* from *Seeds*, I think it may not be amiſs to conſider the moſt proper Method of gathering them in foreign Countries, and packing them up for Tranſportation, that what *Seeds* we receive from Abroad, may not loſe their *Germinative* Faculty before they come to us, or be deſtroyed by *Inſects*, which often happens.

I would adviſe then, that all *Seeds* gathered Abroad, which are deſigned for Tranſportation, but eſpecially if they are to undergo a long Voyage, ſhould be cut from the *Plant*, with Part of the *Branch* they grow upon, a little before they are going to ſhed or drop from the *Plants*, and in that Manner laid in the *Sun* to dry thoroughly, before we offer to pack them up, for the leaſt Moiſture will rot the Seeds: All *Beans*, *Peaſe*, and codded *Fruits* ſhould remain in their *Seed-Veſſels*, which will afford them ſome Nouriſhment, and preſerve them from the Injury of the Sea-Air, which is pernicious to *Land-Plants*. *Fruits*, ſuch as have a *Pulp* or *Fleſh* over their *Seed*, ſhould be dry'd, if poſſible, with their *Fleſh*, and the Stalk or Part of the Branch they grew upon adhering to them; for Nature has provided proper Coverings for every Seed to defend it from Injuries, and for its Nouriſhment 'till it is fit for the Ground: At the Gathering of every *Seed*, Notice ſhould be taken of the Soil, and the Situation, whether *Sand*, *Loam*, *Clay* or *Rocky*; the Side or Top of a Hill, whether boggy Ground, either expos'd to the Sun, or in ſhady Places, if under Trees or in Plains; this is ſo very material, that I know ſome *Plants* will not grow any where but in Woods, and there only, under particular kinds of Trees; as ſome of the *Orchis* Kinds for Example, which I have often try'd to propagate in my *Garden* to little Purpoſe. When a ſufficient Collection of *Seeds* is gather'd, and well dry'd, put each Sort by itſelf into Paper, with its Deſcription, Time of Flowering, the common Names they bear among the Country People, and the Uſe they make of each Kind; then put the Papers cloſe together into Glaſs-Veſſels, or Stone or Earthen Pots well glaz'd, and ſtop'd down cloſe, with Pitch or Rozin melted over the Corks or Stopples: Theſe being ſo order'd, ſhould be put into a Box, filling up the Spaces between them with dry Sand; and then after the Box is well ſecured, ſet it in ſome dry Place of the Ship.

The ſmalleſt kinds of Seeds, and ſuch as are of the leaſt Subſtance, ſhould be put into dry Sand, in ſeparate Parcels, according to their Kinds; for otherwiſe they would ſhrink for want of Air, which they ſhould, as much as poſſible, be debarr'd from while they are upon the Sea. All bulbous Roots ſhould be taken out of the Ground when their Flower-Stalks begin to decay; and when they are well dryed, may be packed up with dry Sand, in Glaſs or Stone Veſſels.

But if it could be compaſs'd to ſend over *Plants* already growing, plant them four or five Inches aſunder in Boxes, having firſt pruned off their Branches; between them plant the bulbous Roots, and over the whole ſprinkle ſome Seeds of the ſmalleſt Kinds, and then make a Cover of Hoops or Lattice-Work, to put over the Box, which will defend the *Plants* while they are at Sea from the *Rats*, and give a free Paſſage for the Air and Sun to come at the *Plants*. And to be yet more certain of their Welfare, an Outſide Caſe of Boards nail'd cloſe together, may be made to put over the Box in hard Weather, to defend the *Plants* from the Sea-Water: Theſe Boxes ſhould not be very deep, leſt they hold the Wet too long about the Roots of the *Plants*: To avoid which, there ſhould be Holes at the Bottom for the free Paſſage of the Water, which the *Plants* ſhould have in ſmall Quantities when the Earth begins to dry, which, perhaps, may be in Twenty-four Hours in ſome Climates, and not in Three or Four Days in others. *Plants* pack'd in this Manner, ſhould ſtand upon Deck if poſſible.

Thus having laid down the general Rules for the Ordering of a *Green-Houſe*, and the *Plants* to be ſhelter'd in it, I ſhall in the next Place proceed to give particular Directions for the *Culture* of ſuch Kinds of *Exotick Plants*, as merit the moſt of our Pains and Admiration.

BIBLIOTHECA BODLEIANA

CHAP.

## CHAP. II.

## *Of* ORANGE *and* LEMON-TREES, *and their* Culture.

THERE is little Difference in the Manner of ordering the *Orange* and *Lemon-Trees*; and ſeeing that theſe Kinds of *Plants* are ſo beautiful in every Reſpect, as to merit an univerſal Eſteem, I ſhall, therefore, be more curious to lay down ſuch Rules for their Management, as may every Way contribute to their Improvement; and firſt of *Orange-Stocks*, which are brought from *Genoa*, and other Foreign Parts.

The moſt proper Seaſon for the Importation of *Orange-Stocks* into *England*, is in *February*; ſo that at leaſt there ſhould be a Fortnight in that Month to prepare them for Growth, that their Shoots may be vigorous and ſtrong the ſucceeding Summer. When we receive them from Abroad, they have very few Roots and Branches; and as they have commonly been laid up in that Condition, in dry Boxes for ſome Time before we receive them, they require no ſmall Care to recover them from their Lethargy. I firſt adviſe that they be laid upon wet Moſs, in ſome large Room, where they may have the Advantage of as much Air from Abroad as may be (provided it be not too ſharp) in the Day-time only for about a Week; this Method, if they are turn'd once in twelve Hours, will recover their ſhrunk Veſſels, and ſwell their Bark; then their Roots muſt be examined, and their wounded and dead Parts cut off with a very ſharp Knife; and of the Earth about them, if they have any, very little taken away; their ſmall remaining Tops muſt likewiſe be prun'd off, leaving only ſuch Shoots as are vigorous about three or four Inches long, and all the Wounds of them cloſely plaiſtered over with ſoft Wax: In this State their Roots muſt be laid in River or Pond Water for about twelve Hours, and ſet to drain for about half an Hour after they are taken out, before they are planted.

The Pots for theſe Stocks, muſt be juſt big enough to admit of two Inches thick of the following Earth on every Side their Roots, and no more, leſt the Warmth of the *Hot-Bed* they are to be ſet into, has not Strength enough to reach them, and make them ſtrike, for the *Hot-Bed* muſt be very moderate and gentle, leſt the Roots are ſcorched, and then it will be to little Purpoſe ever to attempt the Recovery of the *Plants.*

The Earth which I have made uſe of with Succeſs, was one third Part of rotted Wood, one third of freſh ſandy Loam, and as much *Melon* Earth, well mixed and ſifted together; this Soil I always found to make my Trees proſper, and produce excellent Fruit.

The Stocks being in this State, their Pots ſhould be ſet upon a *Hot-Bed,* prepared as directed in *Chap.* I. of the *Kitchen-Garden,* when the great Heat is paſt, after the whole Surface of the *Bed* is cover'd with Mold, to prevent the Steam of the Dung riſing and annoying the *Plants.*

This *Bed* ſhould be made under a warm Wall, and ſheltered from the cold Air with Glaſs on the Sides, and on the Top: The *Plants* being thus prepared for Growth, muſt be moderately water'd about once a Week till *April*; and then, if the Weather be very warm, every third Day. It is alſo to be obſerv'd, That at all ſuch Times as the Sun ſhines warm upon them, their Tops muſt be ſhaded with *Mats*, leſt the tender Shoots, which begin to put forth, be ſcorch'd, and by that Means periſh.

In *May*, when their Shoots begin to ſhoot their Vigour, it will be neceſſary to give them Air by Degrees, by opening the Glaſſes towards Sun-ſet, if the Evenings are not too cold; this, if it be done judiciouſly, will contribute to ſtrengthen them, and make them ſhoot green and healthy. During the Courſe of their firſt Shoot, they muſt be ſhifted every ſix Weeks at leaſt, into freſh *Hot-Beds*; but as ſoon as *June* is paſt, I would not then adviſe any more forcing, but rather endeavour to prevent them from ſetting out a ſecond Shoot, by expoſing them at large to the open Air, in ſome Place ſhaded from the *Sun*, where they ſhould remain till the firſt Week in *September*, and then carried into the *Green-Houſe*; at which Time three or four Inches of the Earth on the Top of their Pots ſhould be carefully taken away, without injuring the Roots, and as much freſh Mold put in its Place.

The *Orange-Trees* being thus ſeated in their *Winter* Habitation, ſhould have as much Air as poſſible, allowed them Night and Day, till the latter End of *October*; the Windows of the *Green-Houſe* ſhould never be ſhut during that Time, unleſs the Winds or Froſts happen to be very ſevere; and in the following *Winter* Months, when the Weather is moderate, no Opportunity ſhould be let paſs of opening the Houſe.

Theſe *Trees*, altho' they love the Shade, yet quickly periſh if they have much Water; let them be frequently refreſhed with it a little at a Time, left too much Wet about their Roots chill or rot them, and deſtroy the *Plants.* I find that *Sheep* or *Deer's* Dung, ſteep'd in the Water for *Orange-Trees*, contributes to make them healthy. The Effect which violent and haſty Waterings will have upon theſe *Trees*, will be, that the Leaves turn Yellow, and often drop off; and above all, will remain for a Year or two languiſhing, without putting forth any Shoots, and at Length entirely go off. Now if by theſe, or ſome better Directions, a *Gardener* maintains his new *Orange-Trees* in good Health, till the latter End of *February*, let him then renew the Earth as he did in the foregoing *Autumn*, and trim the Heads of his Plants, leaving ſix Inches, or thereabouts, of the preceding *Summer* Shoots, if they be ſtrong, or leſs in Proportion, as they are otherwiſe, plaiſtering the Wounds with ſoft Wax, as I have before directed; they will, after this Operation, ſoon begin to ſprout, and make good Shoots the *Summer* following, if they are diſcreetly made acquainted with the external Air, before they are ſet out of the Houſe.

It is commonly practiſed to bring them Abroad about *Mid-May*, eſpecially if moderate Rains fall at the Time: And I have known it laid down as a Rule, to ſet them out of the Houſe, when the Leaf of the *Mulberry-Tree* is as large as a *Crow's* Foot, which, perhaps, may be a certain Sign of the ſettled Temperature of the Air. I have indeed myſelf, had little Regard to either of theſe Rules, but have chiefly truſted to the Time of the *New Moon* in *May*, which I obſerve commonly brings gentle Showers, and warm Weather.

For the *Summer* Station of theſe *Trees*, it is adviſable to provide ſome ſhady Place in the *Garden*, either by Fencing it in with Hedges of *Dutch Elm*, Hornbeam, Holly, or Evergreen Oaks, about twelve or fifteen Foot high, or elſe to clear ſome Place in a *Wilderneſs* or *Wood* to ſet them in, ſuch as may be ſeen at the Right Honourable the Earl of Eſſex at Caſhiobury, and ſome other Places; for in ſuch Shelter this Plant delights exceedingly. With this Way of Management we may expect handſome Trees in three Years from their firſt Planting, minding to change their Pots, as the Roots increaſe in Bigneſs; which Work is beſt done in *February*. And let the *Gardener* take this Advice along with it, That he always plants such Trees ſo ſhallow in their Pots or *Caſes*, that none of the Stem be ſet below the Earth, but rather let ſome of the large Roots joining to the Stem be ſeen above it; and alſo that the Pots be not too large, for then the Roots would chill, by having too much Moiſture about them.

The [illegible] Summer after planting, the *Trees* [illegible] Health [illegible] Marquet-[illegible] the Houſe, and [illegible] *Gardener* [illegible] Quarters or Borders, as [illegible] Wilderneſſes and a Foreſt-[illegible] timely prevented by [illegible] as ſoon as they begin [illegible]

[illegible] great Encourager of Ingenuity, the late [illegible] was ſo much an Admirer of this [illegible] he commonly had Rows of them flower-[illegible] in a Gallery of the *Louvre*; they were [illegible] Caſes of emboſſed [illegible] I leave my Reader to [illegible] Furniture, which [illegible] as well in *Winter*, as in the Summer. The Manner of bringing the Trees to [illegible] at every Seaſon was thus; after the *Gardeners*

*Gardeners* had choſe a Number of Trees ſufficient for their Uſe, they let them remain without Water till the Leaves dropp'd off; and then giving them freſh Earth on the Tops of their Pots, and frequent Waterings in a Glaſs Caſe, they came out, full of Flowers and freſh Leaves, fit for the Place they were to ſtand in; theſe they renewed every Month throughout the Year: And the like Curioſity was alſo in the Palace of the Prince *de Borgheſe* in *Rome*.

The Situation and Climate natural to this beautiful *Tree*, may be conſider'd in the next Place; and may ſomewhat help us to judge of the Temper and Nature of the Air it requires: The firſt Groves of them that we meet with growing wild in *Europe*, are at *Eres* near *Thoulon* in *France*, which is between forty-two and forty-three *Degrees Latitude*; and about *St. Remo*, and the *Riviera* of *Genoa*, in the ſame *Latitude* near the Sea, at the Foot of very high Mountains to the *North* of them; and the firſt Woods of them growing in *Italy*, are as far *South* as *Gaietta*; and ſo agreeable is the Air of the Sea to them, that in many Places more remote from the Sea than *Thoulon* and *Gaietta*, altho' farther *South*, they cannot be made to thrive, without Shelter, in the *Winter*.

The various Kinds of *Oranges* and *Lemons*, would make a very conſiderable Article, if I was to mention each Sort in particular, and, indeed, would be of little Uſe; I ſhall, therefore, only mention ſome few which are the moſt common in our *Engliſh* Gardens. The *Seville Orange* is, in my Opinion, the beſt, as well for the Beauty of its *Leaves*, as for the Goodneſs of its Fruit, which will come to Maturity with us. The *China-Orange* never makes a handſome *Tree*, but is always inclining to look ſickly, and ſeldom bears Fruit in Perfection. The *Curl'd Genoa Orange* is ſomewhat

what more pleaſant to the Sight, but is a very ſlow Grower: And the *Strip'd Genoa*, for the beautiful Variegrations of its Leaves may well enough be introduced as a Rarity; but for its Fruit I have never yet ſeen it fit for any Uſe.

The *Portugal Lemon*, and the *Lime*, bear good Fruit, which will ripen ſo well with us, that I have gathered as good from my own Trees, as any that have been brought from Abroad: *Citrons* and *Shadocks* ripen well in *England*, and if in any Collection they happen to be found, the *Gardener* ought only to obſerve, that as they will grow much quicker than *Oranges*, ſo their Pots or Caſes ought to be larger, and their Waterings more frequent; to which I ſhall add, as a certain Rule, that pruning their Branches muſt be avoided, as much as poſſible; for I have known ſeveral Trees ſpoil by it.

Now although I have given Directions for the Management of large *Orange-Trees*, which are brought us from foreign Parts, and have, by means of the Method I have laid down, eat very good Fruit, which they have produced, yet I find by Experience, that the *Orange-Trees* raiſed in *England* from Kernels, are more hardy, and will bear Fruit with more Certainty, and in much greater Quantities, with leſs Trouble; and therefore, I ſhall inform my Reader of the Method which I practiſe to raiſe them from Seeds.

In *February* I prepare a *Hot-Bed*, in which (as ſoon as the burning Heat is paſt) I place ſeveral Pots filled with light dry Earth, and ſow the Seeds of *Oranges* and *Lemons* in them, about an Inch deep, where they will remain about ten Days before they appear above the Earth; give them little Water till they come up, leſt you rot the Seeds; for when they are taken freſh from the Fruit, the outward Membranes which encloſe the Seeds, are always cover'd with a kind of *Mucilage*, which will remain moiſt for ſeveral Days, and is ſufficient, with the Addition of a ſmall Heat, to make the Seeds ſprout, as an Obſervation of the curious Mr. *Anthony van Leuwenhoek* ſufficiently proves. He ſays, that he took a little *Copper Box*, and put ſome Sand in it, which, for its Whiteneſs, and becauſe it is uſed to ſcour *Tin*, is called *Scouring Sand.* He adds, This *Sand* was very dry of itſelf, but was ſomewhat moiſtened by the *Seeds* he put into it, having newly taken them out of an *Orange*; this he did in *November*, and carried the *Box* ſhut cloſe in the Day-time in his Watch-Pocket, and at Night had it put in a Veſſel of hot Water, by which Means the *Box* was conſtantly kept warm: The ſixth Day he opened it, and found that the *Seeds* had already put forth Roots, near half an Inch in Length; and from Time to Time, as he reviewed them, found them increaſe and put out Branches. This Experiment of Mr. *Leuwenhoek*, indeed, was made by him for a much greater End than what I now uſe it for: He endeavours to prove by it, that every Part of a *Plant*, as well their *Leaves*, *Flower*, and *Fruit*, as their *Roots* and *Branches*, are all contained in the *Seeds*; and that their Germination is only the filling and explaining the minute Parts wrapped up in their *Seeds*, and not from any additional Parts they receive from the Earth they are planted in. But ſee this curious Gentleman's farther Remarks on this Head, in *Philoſophical Tranſactions*, Number 287.

But, to return to my Deſign, I would rather adviſe the ſowing of *Lemon* or *Citron Seeds*, than thoſe of *Oranges*: for ſince neither of them will bear Fruit 'till they are either grafted or inoculated, and the *Lemon Stocks* will as well receive the Buds of *Oranges*, as thoſe of its own Kind, they ſhould be preferred for the ſake of their quick Growth, and hardy Conſtitution. Now, as theſe *Seeds* will riſe at leaſt Four Inches high during the Warmth of their firſt *Hot Bed*, let their Pots be ſhifted every five or ſix Weeks into freſh *Beds*, 'till about *Auguſt*, and then begin to harden them for the *Winter*. I have ſeen *Lemon Plants* raiſed after this Manner, that have been near Three Foot high the firſt Year; for growing together in little Groves, each *Plant* has a kind of Emulation to overtop the reſt, as if they knew the ill Conſequence of ſuperior *Plants* dripping upon them. I have already hinted how much Shade contributes to the Growth of *Plants*, but ſhall once more remind the *Gardener* to defend theſe young *Plants* from the hot Summer's Sun, and give them Air only Mornings and Evenings.

The *February* after they are raiſed, they ſhould be tranſplanted into ſmall *Pots*, and be put again into a *Hot-Bed*, 'till the Seaſon is ſufficiently warm to ſet them Abroad; and in *July* ſome of them will be fit to *inoculate*, and the reſt to *in-arch* the *May* afterward.

The moſt proper Seaſon for *budding* theſe *Trees*, is about the Tenth of *July*, at what Time the *Buds* will readily grow; and the following Spring all the wild Part of the *Plants* above the *Buds* being cut off, and the Wounds covered with ſoft Wax, we may expect a good bearing Shoot of a Foot long at leaſt, before *Winter*, if they have the Help of a *Hot-Bed*; and in two Years afterward, they will begin to bear Fruit if they are well looked after, and are not over-potted.

But *In-arching* them is yet a much quicker Way to make them bear both *Flowers* and *Fruit*; this Work is done in *May*, and by the latter End of *Auguſt* following, they may be cut off; they will then have Fruit upon them, either green or ripe, as you made choice of bearing Boughs to inlay into the wild Stocks. I have heard of Trees, that in leſs than two Years, from the ſowing of the *Seeds*, have had *Fruit* upon them by this means; and I have myſelf raiſed an *Orange-Tree* after this manner, that had *Fruit* and *Flowers* upon it when it was not ſix Inches high. The ingenious Mr. *Whitmill* at *Hoxton*, by a peculiar Method he has in performing this Work, has now ſome hundreds of little *Orange* and *Lemon Trees*, with Fruit upon them as large as any that are brought from Abroad.

As I have now given ſuch Directions for the Management and Improvement of *Orange* and *Lemon Trees*, as I have myſelf practiſed with good Succeſs, I doubt not, but ſuch as are cultivated by theſe Rules, will not be leſs vigorous and healthful. And for ſome Particulars relating to the preſerving them from Froſts and Damps in the *Winter*; ſee the aforegoing Chapter of *Green-Houſes*.

## CHAP. III.

## *Of* Myrtles, Jaſmins, *and* Geraniums, *their* Culture, *&c.*

WE have many Sorts of *Myrtles* in our *Engliſh Gardens* diſtinguiſhed by the following Names: Thoſe with the largeſt Leaves, are the *Orange-leav'd Myrtles*, the *Spaniſh Broad-leaf*, the *Portugal Myrtle*, the *Nutmeg Myrtle*, and that

*Amſterdam Gardens*, which would be too tedious to mention.

The *Spaniſh Jaſmin* is the moſt common of theſe; it bears White Flowers tinged with Purple on the Back of the *Petals*, or *Flower Leaves*, and is very well ſcented: The Time of its Bloſſom, is from *Auguſt* to *November*, and ſometimes all the *Winter*, if it be kept warm, and have Sun enough; this is propagated by grafting it on the *Common White Jaſmin* in *March*, as alſo by in-arching it in *May* upon the ſame common Sort, and the in-arched *Plants* may be cut off the Middle of *Auguſt* following. In *February* we ſhould always cut off the Branches within four or five Inches of the *Stem*; and, after they have freſh Earth put to their Roots, they may be ſet near the Glaſſes or Windows of the Houſe; theſe love not too much Water, and a medium Soil, between Sand and Clay, without Dung; they are to be houſed with the *Orange-Tree*.

The *Portugal Jaſmin* likewiſe bears a White Flower tinged with Purple, but the Bloſſoms are not ſo large as thoſe of the former, though in much greater Number. Sometimes I have ſeen near one hundred in a Cluſter; they ſmell like *Orange Flowers*, and laſt a long Time; the Leaves of the *Plant* are ever Green (as are thoſe of the former) ſomewhat reſembling thoſe of the *Ivy*; it is propagated like the aforegoing *Jaſmin*, and likewiſe by Cuttings planted in *May*, taking Notice that they be of young Wood, and that at leaſt one Joint be ſet in the Earth; for at that Part they take Root, though not 'till the ſecond Spring after planting. I find that the *Plants* raiſed from Cuttings, are apt to ſhoot very vigorouſly, and are therefore barren; but thoſe which are grafted or in-arched upon common Stocks, bloſſom every Year very ſtrong, which may proceed from the Difference of Veſſels in the Stocks and the Graft, which checks its over Vigour.

This *Plant* begins its Bloſſom in *Auguſt*, and continues flowering 'till *October*: We may cut off the in-arched *Plants* in the Middle of *Auguſt*, which is the Time of releaſing all other *Plants* grafted in the ſame Manner, ſetting them immediately under ſome Shelter, leſt they be damaged by the Winds, which often break the *Cion* from the Stock. For this End of *In-arching*, we ſhould be careful to make Proviſion of ſome *Plants* of the *Common Jaſmin* in Pots the Year before we deſign to graft, otherwiſe they will not be vigorous enough to incorporate with the *Cions*.

This *Jaſmin* ſhould be ſet in and out of the Houſe with the *Orange-Tree*, putting freſh Earth to the Roots in the *Spring* and *Autumn*, as we muſt do to every other *Exotick Plant*: But as *Orange-Trees* love Shade in the *Summer*, this cannot have too much *Sun*.

The *Indian Jaſmin* has Leaves ſomewhat like the former; it bears Bunches of Yellow Flowers of a very agreeable Scent; it begins to flower about *Auguſt*, and continues its Bloſſom 'till the *Spring* following. I have frequently gathered ripe *Seeds* of it, and have raiſed *Plants* from them, ſowing them as ſoon as they were ripe, and giving them the Aſſiſtance of a *Hot-Bed*: But the moſt common Way of raiſing this *Plant* is from *Layers* in *Autumn*, or in the *Spring*, when we can get young Shoots to lay down, which ſhould always be as tender as poſſible for this Work, or they will not ſtrike Root, which muſt be obſerved as a Rule in the laying of every Kind of *Plant*. The *Layers* of this *Jaſmin* will not be ſufficiently rooted, 'till they have been a full Year in the Ground, and then may be taken off and planted in ſingle Pots.

The beſt Seaſons of tranſplanting this Kind, is either in *April* or Middle of *Auguſt*; the Earth for *Orange-Trees* does very well for this *Plant*, and it muſt be houſed as the other Kinds of *Jaſmin.*

It would be well to try whether this Sort would not increaſe by in-arching it upon the *Common Jaſmin*; I ſee no Reaſon why it ſhould not, as well as the *Portugal* Kind; but if that will not do, the *Common Yellow Jaſmin*, I think, can hardly fail.

We have two Kinds of the *Arabian Jaſmin*; one with ſingle Flowers, and the other with double Bloſſoms; in other Reſpects they are alike, and require the ſame Kind of *Culture*; the Flowers of both are White, and extremely ſweet-ſcented, but are ſomewhat differing from the other Kinds of *Jaſmin* in their Figure: Both theſe Sorts bloſſom about *Auguſt*, and with good Management bring a great many Flowers; the Leaves are round, ſomewhat curl'd, and ſet on in Pairs at the Joints: I have raiſed them from Cuttings taken off in *April*, when theſe *Plants* ſhould be always pruned within two or three Joints of the Stem, and then have freſh Earth put to their Roots, by means of this pruning they will ſhoot near a Foot in a Summer, as I have ſeen at the *Leyden Gardens*, where they have near one hundred of them in good Health.

This has been eſteemed a very tender *Plant*; but I find it is more injured by Wet than Cold; it will ſtand the *Winter* very well in ſuch a *Green-Houſe* as I have deſcribed, if it has not too much Water, and may be ſet abroad the latter End of *May*, or Beginning of *June*, and remain out of Doors 'till about the 20th of *Auguſt*: The Earth it chiefly delights in is at leaſt two Parts in three of Sand, and the reſt freſh Mould from under a Turf: We may try to in-arch it upon the *Spaniſh Jaſmin*, or increaſe it by *Layers* at the pruning Seaſon.

The *Coffee-Tree* is another kind of *Jaſmin* brought from *Arabia Felix*, about the Latitude of 20, or 21; the Leaves are like thoſe of our *Cheſnut-Tree*, but are ever green, and the Flowers like thoſe of our *Common Jaſmin* in Figure and Colour, but are not ſo ſweet-ſcented; they grow in Cluſters at the Joints, near the Extremities of the young Branches. About *July* this Plant begins to bloſſom, and continues flowering till *October*, ſetting plentifully with Fruit, which remains upon the Tree till the *July* following before they ripen, and are then of a dark red Colour; and in their Shape and Size ſomewhat reſembling the *Berries* of the *Lauro Ceraſus*, but have two *Kernels* in each of them, which ſplit in the Middle like the *Bay-Berries* of the Shops.

In the *Amſterdam Garden*, which is ſo famous for curious *Plants*, I have ſeen ſome of theſe Trees near eighteen Foot high, ſo full of *Berries*, that ſeveral Pound Weight of Fruit was gathered off of two Trees only. The *Hollanders* firſt got *Plants* from *Arabia*, which they afterwards planted about *Batavia*, and having increaſed them there, they ſupplied the *Garden* at *Amſterdam* with them, and have now raiſed ſo many from Seeds that ripened in *Holland*, that they have ſent over ſeveral Trees to their Settlement at *Surinam* in the *Weſt-Indies*, in order to cultivate them in that Country, where they will undoubtedly turn to good Account; as I am perſuaded they would do if they were propagated in the *South* Parts of *Carolina*; which I think would be well worth our Tryal, if that Country remains in our Hands.

In the *Culture* of this *Plant* the *Dutch Gardeners* prepare a Soil for it compos'd chiefly of Sand, and the Refreſhings they give it with Water are ſeldom and ſparing in the *Winter*; but in the *Summer* it has a more plentiful Allowance, eſpecially during the Time of its Bloſſom. About *June* they take it out of the Houſe, and waſh and clean the *Leaves* and *Branches*, and letting it remain in the Air 'till the Beginning of *July*, they then ſet it in again to the *Conſervatory* for flowering. In *April* and *Auguſt* they give freſh Earth to the *Plants*, and they thrive extremely.

In the raiſing of theſe *Plants* from *Seeds*, they firſt ſeparate the *Kernels* in each *Seed*; and after they are cleanſed from the Mucilage about them, they are immediately ſet two Inches deep in Pots fill'd with ſandy Soil, and plunged into *Hot Beds*: The *Seeds* being thus order'd, muſt be kept moiſt by frequent Sprinklings of Water till they come up, and the Glaſſes over them always kept cloſe: About ſix Weeks after ſowing they will begin to appear, and have two or three Leaves apiece before *Winter*. I have heard, that unleſs the *Seeds* are ſown as ſoon as they are gathered, they will not come up; and hitherto there is no other Way known of propagating this *Plant*, but from *Seeds*, though I think it would not be againſt Reaſon, to try to in-arch it upon ſome other Kind of *Jaſmin*.

The *Geranium* is a *Plant* whoſe Varieties are very conſiderable, if we were to join thoſe of our own Country with the Kinds we receive from *Africa*; it takes its Name of *Cranes-Bill* from its Seeds, which ſomewhat reſemble the *Beak* of a *Crane* or *Stork*: Hitherto the *Exotick Kinds* have carried *Latin* Names only, which I think help to confound ſome *Gardeners*, and indeed are too long to recite; I ſhall therefore, ſince I have this Opportunity,

tunity, give each Sort, which we cultivate at preſent in our *Green-Houſes*, a ſhort *Engliſh* Name for the greater Eaſe of the Memory.

Many of the Sorts I deſign to treat of, have been figured by the learned and accurate Dr. *Commelin*, *Botanick* Profeſſor at *Amſterdam*, and that late admirable *Botaniſt* Dr. *Herman* of *Leyden*, to whoſe Works I refer for the Cuts of thoſe I am about to mention.

In the *Hortus Lugduno Batavus*, Page 275, we find the *Geranium Africanum Arboreſcens, Ibiſci folio rotundo, carlinæ odore*; which we may *Engliſh*, The round Mallow-leav'd Cranes-Bill.

Page 278, of the ſame, *Geranium Africanum Fruteſcens, malvæ folio Laciniato odorato*: or, Notch'd Mallow-leav'd Cranes-Bill.

Page 283, *Geranium Africanum, Alchimillæ Hirſuto Folio, Floribus Albidis*, or, Alchimilla-leav'd Cranes-Bill.

Page 285, *Geranium Africanum, Noctu Olens, Tuberoſum & Nodoſum, Aquilegiæ follis*; or, Columbine-leav'd Cranes-Bill.

In Dr. *Commelin*'s *Prælud. Botanic.* Page 51. *Geranium Africanum Arboreſcens, Archimillæ hirſuto folio, floribus rubicundis*; which we may call, The painted-leav'd Cranes-Bill; as I ſhall farther explain.

Page 52, *Geranium Africanum, foliis inferioribus Aſari, ſuperioribus Staphydis Agriæ, Maculatis, Splendentibus, & acetoſæ Sapore*; which we may name, Spotted Ivy-leav'd Cranes-Bill.

Page 54, *Geranium Africanum, fruteſcens folio Craſſo, & Glauco, acetoſæ Sapore.*

Beſide theſe, we have in our *Gardens*, two dwarf Kinds of *Cranes-Bill*, with tuberous Roots, whoſe Flowers ſmell ſweetly in the Night: I have not ſeen any Cuts of them, and therefore ſhall not give the Authors Names; the one I ſhall call, *The Anemone-leav'd Night-ſcented Cranes-Bill*, and the other, *The Fennel-leav'd Night-ſented Cranes-Bill*.

The firſt of this Liſt makes a Shrub of three Foot high; the Leaves ſmell ſomething like *Rhubarb*, and it bears large Bunches of purple Flowers variegated with a darker Colour; this bloſſoms from *July* to *September*.

The ſecond, with the notch'd Leaves, is a Shrub about the Height of the former, with ſweet-ſcented Leaves; the Flowers are ſmall, and of a very pale purple Colour, and appear about *May* and *June*.

The third has Leaves like the *Plant* called *Ladies Mantle*, is a low *Plant*, in compariſon with the others, and bears white Flowers about *June*.

The fourth hath large Knots at the Joints, and Leaves like the *Columbine*; the Flowers which commonly appear in the *Summer*, are extremely ſweet in the Evenings, but have no Scent in the Day-time.

The fifth, which I call, *The Painted-leav'd Cranes-Bill*, makes a Shrub ſometimes four Foot high, and bloſſoms very plentifully all the *Summer*, bearing large Cluſters of Pink-colour'd Flowers; each of its Leaves are curiouſly marked with a dark-colour'd Streak in the Shape of a Horſe-ſhoe, which, together with the pleaſant Green of the Leaf, is very beautiful; and, what is likewiſe worthy our Notice, when theſe Leaves decay, the green Parts change into a fair Yellow; and the dark Streaks, which are naturally almoſt black, alter into a bright *Vermillion*; ſo that I cannot help ſometimes, for the Sake of ſo agreeable a Variety, bruiſing ſome of them to forward their Decay. The Alteration of Colours in the Leaves of this Plant gave Occaſion to a learned *Member* of the *Royal Society*, Dr. *Stuart*, to conſider the Cauſe of different Colours in the Leaves and Flowers of Plants, which he has ſo judiciouſly ſet forth in a Letter he was pleaſed to honour me with upon that Subject, that, for the Embelliſhment of my Work, I ſhall inſert in the Concluſion of this Chapter.

The ſixth Kind mentioned in the Liſt has ſhining Leaves like thoſe of *Ivy*, and pretty Flowers, of a pale purple Colour, variegated with a deep Red: The *Plant* inclines to run upon the Ground, and therefore to give it a better Appearance, we are forced to ſupport it with Stakes; it bloſſoms in the *Autumn*.

The ſeventh has thick juicy Leaves of a Sea-green Colour, taſting ſomewhat like *Sorrel*; the Branches are naturally ſo weak, that they muſt be ſupported with Sticks. About *July* this *Plant* begins to flower, and remains bloſſoming 'till about *September*; the Flowers of this Kind are of a pale Fleſh Colour, and variegated with Crimſon.

All theſe Kinds are propagated either by *Seeds* or *Cuttings*; the *Seeds* may be ſown in *March* upon a *Hot-Bed*; but the moſt proper Seaſon of planting the *Cuttings* is about the End of *May*, and then they will eaſily ſtrike Root in the natural Ground, and become handſome *Plants*, fit to be potted the *Auguſt* following; they love a medium Soil without Dung, and delight in Water; they may be houſed with the *Orange Trees*, for they are not very tender.

The other Kinds of *Geranium*, ſurnam'd *Night-ſcented*, bloſſom at uncertain Times in the *Summer*, and are propagated by parting their Roots in *May*. The Leaves of the *Fennel-leav'd* Kind, have a very grateful Scent; both theſe are hardy, and may be houſed with others; they love a light Soil.

I ſhall now conclude this Chapter with the ingenious Letter which I promiſed, relating to the Colours in the Leaves and Flowers of *Plants*.

## *To Mr.* BRADLEY.

*LONDON*, *May* 9th, 1717.

*S I R*,

YOUR ingenious Converſation, join'd with the Delights of Mr. *Balle's* curious *Gardens* at *Cambden-Houſe*, made ſuch an Impreſſion t'other Day, as led me into the following Thoughts on the Subject you then ſtarted, concerning the Variation of Colours in the *Leaves* and *Flowers* of *Trees* and *Plants*, ſuch as is remarkable in the variegated *Hollies* and *Tulips*; of which Variegation you have certainly aſſigned the true remote Cauſe, in the Second Part of your *New Improvements of Planting and Gardening*,

*ing*, Chap. VII. Sect. I. of the *Tulip*, where you aſſert, that a Weakneſs and Defect of Nouriſhment produce that Variety of Colours, which was not naturally and originally in the *Plant*; which you ſupport by Obſervations, Experiments and Hiſtories there, and in ſeveral other Parts of your Works, ſo as to put it beyond all Doubt.

On this Occaſion you ſhewed me a bruiſed and faded Leaf of the *Geranium Africanum Arboreſcens Alchimillæ hirſuto folio, floribus rubicundis, Commel. Præl. Botann.* partly Green, but turn'd of a pretty deep Red in the bruiſed Parts; this gave Riſe to our Diſcourſe concerning the immediate Cauſe of the natural Colour in Plants, and of this præternatural Colour in the bruiſed Parts.——I'm perſwaded I ſhall not be able to give one of your Taſte any Satisfaction on this Subject: I only venture to ſend you ſome looſe Thoughts concerning it, being aſſured that your various Obſervations and Experience will ſoon expunge the Errors of one leſs converſant about theſe Things.

I imagine then, that the natural as well as preternatural Colours in *Plants* and *Flowers*, are owing immediately to the Juices circulating or contained in their Veſſels, and not to the Veſſels themſelves, which I think appears by the expreſs'd Juice retaining the Colour of the *Leaf* or *Flower* from which it is drawn, while the groſs fibrous Part, which is the Veſſels retain'd in the Strainer, loſe their Colour with their Juice, and being examined by the naked *Eye*, or a *Microſcope*, appear colourleſs or tranſparent, ſo far as they are drained of their Contents: Theſe then being tranſparent, reflect few Rays to our Eyes, but tranſmit moſt of them, which the more opake Maſs of Fluids reflects, giving us ſuch colour'd Rays of Light, as it cannot abſorb or tranſmit. 'Tis from the Juices then we have the ſeveral Colours of *Plants* and their *Flowers*; but what ſpecial Texture of the Fluids, and their Surfaces, or of any other Object, may be neceſſary to reflect this or that kind of colour'd Rays, for ought I know, is not determined with any abſolute Certainty.

But as moſt of our Knowledge of Nature conſiſts in our being able to aſſign ſome remoter Cauſes, and a few Effects of Things, in ſome groſs Manner, rather than in an intimate Acquaintance with their Eſſences: So after the ſame Manner we may be able to go ſome Length in this Diſquiſition, towards finding out the remoter Cauſe of Colour in the Juice of *Plants*, though we cannot point out the minute Figures in the Particles of that Fluid, which may immediately produce this Effect.

Thus then the Bloſſoms and Fruit produced according to the Nature of the ingrafted Branch, and not of the Stock of a different Kind, do ſhew that the circulating Juice of *Vegetables* is alterable by the Mould of the Veſſels through which it paſſes, ſo as to be forced by them to put on a different Colour and Taſte from what it had before it enter'd them, and we find this equally true in Animals.

There's only ſome, and thoſe very few, Exceptions of Juices in *Plants*, and common Salt in Animals which ſeem to be inconquerable by the Power of their Veſſels, ſo as to be able to paſs through them, and circulate for ſome time without any ſenſible Alteration. The Chymical *Analyſis* of the Blood, Urine, *&c.* of ſuch Animals as uſe common Salt in their Food, having diſcovered it unaltered in any of its *Qualities*, after many Circulations in the Animal Body: And by your own Experiments, mentioned Ch. I. Part I.

of your *New Improvements of Planting and Gardening*, and *Chap.* II. *Sect.* I. By theſe Experiments I ſay, it appears, that ſome Juices are ſo far from being liable to ſuffer any Alteration by the Veſſels of the *Plant* in which they circulate, that they rather ſeem to have the Power of altering the natural Frame and Texture of the Veſſels themſelves, and of making a very laſting preternatural Impreſſion upon them, by which they become capable afterwards of moulding and framing their Juice to a different Colour from what it had naturally, and before the Experiment; elſe it would be very difficult to conceive how ſuch a ſmall Quantity of Juice, communicated from a ſingle Bud of yellow-ſtrip'd *Jaſmin*, inoculated upon a Branch of a plain *Jaſmin-Tree*, ſhould, in three Months Time, (ſuppoſing itſelf to periſh, as the Experiment allows, immediately after that Time) be able to occaſion ſuch an Alteration of the natural Juice of the whole Tree, to the Colour of the Bud inoculated, continually through all the ſucceeding Years of that Tree's Duration; for ſuch a durable Effect muſt have a permanent Cauſe, but that cannot be found in the fluctuating Juice, which is daily waſted and renewed, but muſt be owing to ſome Alteration in the Figure or Diameters of the Veſſels, which may be ſuppoſed to continue the ſame for many Years after, unleſs ſome new Alteration be induſtriouſly, or by ſome uncommon Accident, wrought upon them: The Concluſion to be drawn from the Experiment, *Chap.* II. *Sect.* I. will be much the ſame.

But Inſtances of this Kind being very rare, we are only to regard the common Courſe of Nature, which has made theſe circulating Juices generally alterable by the Power of the *Solids* or containing *Veſſels*, both in *Plants* and *Animals*. Thus the Juices do ſeem to get and retain their ſeveral natural Colours from the *Solids*, ſo long as they continue in a due Courſe of Circulation, through them.——— But when the Circulation, for whatſoever Cauſe, begins to fail or become languid, there ſeems to be yet another poſſible Cauſe of Colour in *Plants*, to wit, of thoſe preternatural Colours or Variegations, ſubſequent to a Defect of Nouriſhment, or a Wound or Bruiſe in any of their Parts: In all which Caſes, the Circulation and concurring Energy of the Veſſels are languid; and, therefore, a Degree of Stagnation enſues: And as every Stagnation of a vegetable Juice, is attended with a proportionable Degree of Fermentation, and Fermentation is productive of conſiderable Alterations, both in the Taſte and Colour of the fermenting Juice, it may not be altogether improbable, that in the Caſes mentioned, the Variation of Colour may proceed from certain Degrees of Fermentation in the Juice; tho' I only advance this as a probable Conjecture, and not what I can, from any Experiment, demonſtrate.

However, to render this Conjecture ſomewhat probable, we are to conſider, that the conſtant natural Tendency of all recent vegetable Juices is to Fermentation, which commences ſo ſoon as they are left to themſelves, or delivered from a progreſſive local Motion of the whole Maſs: This appears in the expreſs'd Juice of the *Grape*, and of all *Fruits*, and in *Malt Liquors*, which from the Beginning are in a few Days carried to the Height of Fermentation, in which Time they acquire firſt a ſweeteſt, and afterwards a vinous Taſte; and by a ſecond Fermentation (which in the weakeſt of them happens very ſoon after the firſt) become Vinegar or ſowre; their Colour at the ſame Time becoming leſs ſaturated, more tranſparent, leſs opaque. But this is yet more remarkable in the Juice of high-colour'd Flowers, as of the *Clove-July-Flowers*, *Corn Poppy*, and *Violet*; all which Juices are apt to ferment in ſome little Time after Expreſſion, and in the Fermentation ſenſibly loſe a good deal of their Colour, become paler and more tranſparent. Indeed, the *Violet* Juice loſes almoſt entirely its Colour in Fermentation. The ſame Fermentation happens to the Juice of Vegetables yet contained in their Veſſels, and enjoying ſome low Degree of irregular Circulation, as appears by *Herbs*, *Graſs*, *Hay*, *Flowers*, *Fruits*, &c. cut down and thrown together in a Heap, where all the Signs of Fermentation do very ſoon appear; ſuch as *Heat*, *Sweating*, change of *Smell*, *Taſte* and *Colour*; ſo that it ſeems plain, that Fermentation in all its Effects, takes Place in the Vegetable Juices, ſo ſoon, and as far as the Circulation declines: Theſe two different Powers or Operations of Nature, being ſo contrary to one another, that they cannot ſubſiſt together in Perfection, but, like the oppoſite Weight in the Scales of a Balance, as the one preponderates, the other muſt give way. And, indeed, the Caſe in *Animals* is very near parallel to this, if we ſubſtitute Putrifaction in them, to Fermentation in *Vegetables*; for in thoſe we find, that the Blood in a bruiſed Part degenerates from its natural Colour by Stagnation, into a Livid, Blue, Green and Yellow (all Signs of Putrifaction) ſucceſſively, until the Re-abſorption be perfected, and the Circulation reſtored. — This is farther illuſtrated by the common Practice of ripening green Fruit in Straw, or in a moderate Warmth, where Evaporation of the Juice and Deſication may be avoided; which ſhews, that the Change of Taſte and Colour can be owing to nothing elſe here, than a certain ſlow Degree of Fermentation, entertained by that Artifice, in the Juice contained within the Veſſel or Veſicles of the Fruit: Was there, indeed, a free and open Communication with the external Air, this Fermentation would go on to produce the ſame Effects more quicker, as we ſee in the ſame Juice expreſſed: And as all Experiments in Fermentation do ſhew, that either a total Stagnation, or ſome Degree of it, and Heat, are neceſſary to produce Fermentation in vegetable Juices, the Autumn affording us a ſlow Circulation of the Juices, and an increaſed Heat; theſe two concurring, muſt needs produce that Degree of Fermentation, to which we owe the Ripeneſs of our growing Fruits, and the Change of their Colours and Taſte in that declining Seaſon; as we owe the Ripeneſs of our Liquors more remarkably to the very ſame Cauſes: And was it poſſible there ſhould be a perpetual Spring, that is, a continued equal briſk Circulation of the Juices, with ſuch a low Degree of Heat as that Seaſon affords, it would be equally impoſſible to produce ripe Fruit, becauſe the two Prerequiſites of Fermentation would be wanting in Nature, tho' Art might, in ſome meaſure, ſupply that Defect.

The Concluſion then ſeems to be this; That Circulation and Fermentation are the Two only Powers in Nature, which can produce the Variety of Colours, and the other Changes we obſerve in Vegetables; as Circulation and Putrifaction are the two Powers that work the various Changes in Animals: And that as the due Degree of Circulation in either, declines, or is impaired, Fermentation or Putrifaction takes place reſpectively, exhibiting the Signs of Diſeaſes or Decay, of which themſelves are the immediate Cauſes.

If I rightly remember, ſomething was mentioned in our Converſation concerning the different Strength of the coloured Rays of the *Sun*, and whether the Reflection of theſe ſtronger or weaker Rays, might not depend upon a ſuitable Strength and Weakneſs in the Texture of the *Plant* or *Flower*; as if the ſtrongeſt Rays, which are the Red, being reflected by a red *Flower*, might not argue a greater Strength in the Texture of that Flower, or its Juices, than is in the blue *Flowers*, which reflect only the Blue, to wit, the weaker Rays of the *Sun*.

If we may judge of the Strength of the Rays of the *Sun*, by their different Degrees of Refraction in paſſing through a *Priſon*; as the Refraction increaſeth, ſo their Strength decreaſeth in this Order; *Red*, *Orange*, *Yellow*, *Green*, *Blue*, *Purple*, and *Violet*; ſo that the *Red* is the ſtrongeſt, ſuffering leaſt Refraction, and *Violet* the weakeſt, as it ſuffers the greateſt Refraction. But when we conſider theſe Rays, as reflected from opaque Bodies, we find that Objects of the weakeſt Texture, reflect the ſame Kind of Rays with thoſe of the ſtrongeſt make, as *Red* is ſhewn by the tender *Tulip*, as well as by the more durable *Roſe*; and ſo in a Variety of other Objects, differing yet more in Strength or Weakneſs: So that the Strength of Bodies reflecting Light, ſeems not to be ſo much concerned in the Reflection, as the Frame and Diſpoſition of their Surfaces, which may be the ſame in the Weakeſt, as in an Object of the ſtrongeſt Compoſition. Beſides, the Strength of the Texture of *Plants* and their *Flowers*, ſeem to depend more upon the Firmneſs and Diſpoſition of their Veſſels, than upon the Conſiſtence of their Juices; but their Veſſels, being tranſparent, are leaſt concerned in the Reflection of Colours; therefore the reflected Colour ſeems not to depend upon any Propoſition of Strength or Weakneſs in the *Plant* or *Flower*.

Thus, Sir, I have ventured to ſhew you how ſuperficial and conjectural my Knowledge on this Subject is, in hopes that you'll forgive and correct the Faults, which my Compliance with your Deſire has led me to diſcover; being, with ſincere Reſpect and Eſteem,

*SIR,*

*Your moſt Humble*

*And Obedient Servant,*

ALEX. STUART.

## CHAP. IV.

### *Of the* Culture *of the* Melianthus, Oleander, Malabar-Nut, Leonurus, Amomum Plinii, Caper, Acacia, Apocinum, *and other* Exotick Shrubs, *which are not* ſucculent.

OF the *Melianthus* we have two Kinds, the Greater and the Leſſer; they are both *African Plants*, and bloſſom freely with us, eſpecially if they are not uſed too tenderly. The large Kind will ſtand abroad during the Winter, and ſeldom fails to produce its Spikes of Flowers every Year, which are of a *Coffee* Colour: Theſe Flowers afford each of them a Drop or two of a clammy Juice, taſting as ſweet as Honey, from whence I ſuppoſe it took its Name of *Melianthus*, or *Honey-Flower.* The ſmalleſt Sort is not ſo common with us as the other, and is therefore kept in the Houſe all *Winter*; tho' I am of Opinion, it would ſtand abroad as well as the large Kind, which comes from the ſame Country. The Flowers of this ſmall ſort are very beautiful, having a Mixture of Red, Green and Yellow in them. Both theſe *Plants* are propagated with Eaſe, from Slips taken from about the Roots any time between *May* and *Auguſt*; they delight in ſandy Soil, and much Water, eſpecially the large Kind. Both theſe are deſign'd with great Accuracy; the firſt in the *Hortus Lugd. Bat.* and the ſmall ſort in Dr. *Commelin*'s *Plant. Rarior. Amſtelod.*

The *Oleander* or *Nerium*, which ſome call the *Indian Laurel*, has many Varieties. The moſt common of them in the *Engliſh Gardens*, is, the Sort with the red Flower, which is call'd the *Scarlet Oleander:* It is ſo hardy, that I have kept it abroad all *Winter*, without any other Shelter than a *South* Wall. It is eaſily propagated by *Layers* in *April*, which will ſtrike Root to tranſplant the *Auguſt* following. We have likewiſe a white flowering Kind, as hardy as the Scarlet Sort; but the other Varieties of this *Plant*, ſuch as the *ſweet-ſcented Oleanders*, with *Single* and *Double Flowers*, are eſteem'd more tender, and ſhould be houſed with the *Orange-Trees:* All theſe bloſſom in *July* and *Auguſt*, and are propagated like the firſt; they love a medium Soil, without Mixture, and moderate Watering. See the Figures of the two laſt in the *Hortus Lugd. Bat.*

The *Adbatoda Zeylanenſium*, call'd by our *Gardeners*, the *Malabar-Nut*, is very apt to bloſſom with us, but has not yet, as far as I can learn, produced any ripe Fruit in *England:* It makes a large *Plant*, and is pretty hardy, and is an extravagant Lover of Water: The Earth ſhould be the ſame as for the *Oleander*, and the Pots large; for theſe Trees increaſe prodigiouſly in their Roots, which ſhould be prun'd every *Auguſt*, and freſh Earth put to them: This is increaſed from Cuttings planted in *May*, which ſtrike Root very eaſily in the natural Ground: It muſt be houſed with the *Orange-Tree*. There is a good Cut of this *Plant* in the *Hortus Lugd. Bat.*

The *Leonurus* is a *Plant* of the *Cape of Good-Hope*, named by *Breimus*; it is of the Species of the *Sideritis* or *Iron-Wort*, in which Tribe Mr. *Ray* has plac'd it: We have two Sorts, one with Leaves like *Hemp*, and the other with round notch'd Leaves, like thoſe of the *Lamium*, or *Dead-Nettle*; the Flowers of both Kinds are alike, of an *Orange-Colour*, and of the ſame Size and Figure, bloſſoming in *September* and *October*; they are both eaſily propagated by Cuttings planted in any of the *Summer* Months upon a common Border, where they ſoon ſtrike Root, if they have Water enough; the Earth for the foregoing Plants is very fit for this, and in every Reſpect it ſhould be treated like the *Malabar-Nut*.

The *Amomum Plinii*, or *Tree Night-Shade*; is a pretty Shrub, eaſily propagated, either from *Seeds* or *Cuttings*, which we may put into the natural Ground in *May*; the *Berries* are ſomewhat like *Cherries*, and ripen ſoon after the *Plant* is brought into the Houſe, and remain upon the *Plant* all *Winter*; it is called by ſome therefore, the *Winter-Cherry*, which is the moſt common Name: Its Culture is the ſame with the foregoing *Plant*; only to make it bear Fruit plentifully, it may be brought out of the Houſe with the *Myrtle*; and during the *Summer*, it muſt ſtand in ſome Place defended from the *Sun*, and conſtantly ſupply'd with Water; but it will not bear any Fruit if it be ſet under Trees: It is ſo hardy, that I believe it would ſtand Abroad all the Year, but I have not yet try'd it.

In the ſame Tribe is the *Mala Inſana*, or *Mad Apples*, or the *Solanum Pomiferum*, which is extremely well figur'd in the *Hort. Lugd. Bat.* It has Leaves deeply notch'd and arm'd with *Spines*; the Flowers are of a deep Purple, and the Fruit, before they ripen, variegated with White and Green; and being fully mature, are as large as ordinary *Golden-Pippins*, and of a bright yellow Colour; theſe Fruits ripen in the *Winter*, and contain many ſmall Seeds, like thoſe of the *Capſicum Indicum*, or what we call *Guiney-Pepper*; they may be ſown in *March* or *April* upon Hot-Beds, and will bear Fruit the ſecond Year: Give this *Plant* the ſame Earth as the *Orange-Tree*, and houſe it at the ſame Seaſon: This, like all other potted *Plants*, muſt have freſh Earth every Spring and Autumn. Beſides this, we have another Kind, whoſe Leaves are ſhaped like thoſe of the *Oak*; but are ſo hoary, that they ſeem to be made of white Woollen-Cloth; this Sort bears ſmaller Fruit than the other, of a Golden Colour, which alſo ripen in the *Winter*: It requires the ſame Management as the former Kinds.

The *Caper* has been propagated with great Care in our *Green-Houſes*, to very little Purpoſe: Where the greateſt Induſtry has been uſed, it has hardly been brought to flower in *England*; and tho' it has had the Advantage of the beſt Stoves, it has been ſubject to die in the *Winter*, which has given Occaſion to ſome *Gardeners*, to believe it was too tender for this Climate; but that Notion is unreaſonable, ſince we know the *Caper* is an *European Plant*, growing familiarly about *Genoa*, and the *South* Parts of *France*; the Soil and Situation is only to be conſulted to make it thrive very well in *England*, even in the open Air. It will reſiſt the Severities of our *Winters*, as I have experienc'd, being ſown in the Cracks of old

Walls, where it ſtrikes Roots in the Mortar: Where it grows wild, it grows in like manner, on the ſides of Rocky Places among Rubbiſh, and in Holes of old Stone Walls or Ruins; if even it is planted in a Pot of Rubbiſh, it will not thrive, if it is directed to go upright, but muſt rather be ſo diſpoſed, as either its Root may be ſomewhat above the Branches, or at leaſt it may grow horizontally, ſuch as it will do, if it be ſet in the Side of a Wall. The Bloſſoms are very beautiful, of a whitiſh Colour, crouded with *Tendrils* or *Staminas* of an *Orange* Colour. The Buds of theſe Bloſſoms are pickled for Eating. It may be as well propagated in *England*, as in any other Part of *Europe*, by obſerving the Method I deſcribe, and ſowing the Seeds in *March*, which readily come up, if we cover them with ſifted Rubbiſh after we have laid them in their proper Places. It has been a great Fault that ſome have been guilty of, when they have received *Plants* and *Seeds* from foreign Countries, to give them too much Warmth, without conſidering whether they came from the *North* or the *South*; from *Muſcovy*, or *Greenland*, or under the *Line*. I am of Opinion it would be as hard to keep an *Iceland* Plant with us, as one that grew immediately under the *Line*; for as the one is naturally maintain'd by exceſſive Cold, ſo is the other by extreme Heat. I imagine that the greateſt Cold of our *Winters*, is near the ſame with the Temper of Air in the *Summers* of thoſe Countries lying in ſeventy or ſeventy-five Degrees Latitude; and if ſo, then the *Plants* from thoſe frozen Parts of the World, could only be made to grow with us in our colder Seaſons, when perhaps they would not be naturally inclin'd to ſhoot, for then the Sun would be far diſtant from their native Country, which would be the

Time for their *Winter*; and if we could make them ſhoot at that Time by our natural Temper of Air, the Heat of our *Summers* would afterwards ſcorch them to Death, or ſmother them, unleſs they were to be kept in *Ice-Houſes* during the Seaſon of our warm Weather, and not expos'd abroad till our Froſts began: For if we were to follow Nature in the *Culture* of *Plants* from Hot Countries, we muſt do the ſame in the Management of thoſe from the frozen *Zone*; we muſt imitate the Heat of one, and the Cold of the other.

Let us not therefore miſtake, in ſuppoſing that the ſame Degree of the Sun's Heat, and the ſame Temperature of Air, which is natural to any one Part of the World, is neceſſary for the ſetting in Motion, the *Sap* of the ſeveral *Plants* natural to divers Countries: As every Climate is different from the reſt, ſo are the ſeveral *Plants* in thoſe Climates naturally adapted to grow by means of the wonted Temper of Air and Warmth of their native Countries, and will not thrive near ſo well in Stations only a little differing from the Place of their Birth: And, indeed, it is partly the ſame in living Creatures, which we find do not all require the ſame Degrees of Warmth for hatching them for their Eggs: The ſame Heat which hatches the Egg of a *Pullet*, would deſtroy the Eggs of *Inſects*: And I ſuppoſe that the Warmth which hatches a *Pullet*, would not be half enough to hatch the Egg of an *Oſtrich*, who is forced to lay her Eggs in the ſcorching Sands of *Africa*, to bring them to Life.

It is obſervable, That *Moſſes* of ſeveral Kinds only grow with us in the *Winter*; and at the leaſt Approach of warm Weather they decay, and are entirely at a Stand, and ſeemingly dead when our *Summers* begin; which may ſhew us that there are *Plants* that grow in certain Degrees of Cold (as we call it) as well as Heat; for *Moſſes* are no leſs perfect *Plants* than *Oaks*, or other the moſt remarkable Trees; they have *Roots*, *Branches*, *Leaves*, *Flowers* and *Fruit*, as well as the moſt notable *Plant*. I have heard that the colder Climes abound with *Moſſes*, which are ſtill larger and in greater Quantities, as we go more towards the *North*; and that they ſerve for Food for the *Rane Deer* in the *North* Parts of *Muſcovy*. I remember once to have ſeen a *Plant* brought from about *Norway*, which grew in 65 or 66 Degrees, that budded out in *December*, and continued growing till the following *March*; but after that I am not well aſſured what became of it. But 'tis Time now that I return to the *Culture* of thoſe *Plants* I undertook to treat of in this *Chapter*. Beſides the *Caper* already mentioned, we have two other Kinds, That with the ſmall yellow Flower, and the *Bean-Caper*; they are both raiſed from Seeds ſown in *March* in ſandy Soil; the firſt requires the *Green-Houſe* in the *Winter*, but the other will thrive very well in an open Border, as I have ſeen done in the *Amſterdam Gardens*, altho' it is commonly houſed with great Care in *England*.

I have ſeen many ſorts of *Acacia* cultivated in the *Amſterdam Gardens*; and I remember formerly three or four Sorts of them were growing among the Rarities at *Hampton-Court*; but at preſent we have few of them in *England*, unleſs it be the *Virginian Kind*, which grows to a large Tree, and will ſtand abroad without Shelter in the *Winter*; as we may ſee ſome of them now growing in the Court before *Ruſſel-Houſe*, *Bloomſbury*, and in the *Old Palace Yard*, *Weſtminſter*; a plain Proof we might eaſily naturalize the *Virginian* Plants to our Climate. The Leaves of this, and other *Acacias*, are not unlike thoſe of the *Tare* or *Vetch* and differ from one another chiefly by being larger or ſmaller, and not in their Shape: Some again are varied from the reſt, by having large Spines or Thorns growing upon the Foot Stalks of the Leaves, ſometimes as large as Cock-Spurs, and the Flowers of ſome of them are ſweet-ſcented; theſe, as they come from ſeveral Parts of the World, ſhould be conſidered in relation to the Heat neceſſary for them; but they all, ſo far as I yet have obſerved, love a dry ſandy Soil, and little Water.

The *Apocinum*, or *Dog*'s *Bane*, has many Varieties; ſome growing upright like little Trees, and others climbing and creeping on the Ground like the *Woodbind:* The Flowers in their Shape, are not much unlike thoſe of the *Amomum Plinii*, but have their Petals turned more back; their Colours are various; theſe all bear Cods, for the moſt part ſhaped like thoſe of the long *Guiney-Pepper*, but their Out-ſides commonly covered with long tender Spines of the ſame Colour with themſelves; within them are the Seeds, lying as it were in a Bed of Cotton, ſome of which adheres to each of them: from the Seeds we may propagate them with eaſe, by ſowing them in *March* on *Hot-Beds*, or elſe raiſe every Sort I have yet tried, from Cutting in the ſame Month, unleſs they be ſuch as have Tuberous Roots, which muſt then be parted; and ſome indeed which die to the Root every *Winter*, will be better increaſed from *Off-ſets* taken from the Roots: I give them commonly a light natural Soil, which I find agrees well with them, and little Water; for they are all very Milky, and apt to rot with much Wet. As to their Shelter in the *Winter*, it may be given them according to the different Climates they come from, and be ſet into the Houſe ſooner or later, as they are more or leſs tender.

We have two Sorts of the *Canna Indica*, or *Indian Cane*; one with plain Green *Leaves*, and the other with variegated *Leaves*: they both flower in the Autumn, producing Spikes of Scarlet Bloſſoms extremely beautiful; The Firſt is raiſed from Seeds ſown in *March*, upon a *Hot-Bed*, and may be increaſed by parting the Roots in the ſame Month, and ſo the ſtrip'd Sort alſo is propagated by *Off-ſets*; for the *Seeds* of the ſtrip'd Kind, which often ripen in *England*, will produce *Plants* with plain Leaves: They delight in a ſandy Soil, and little Water, and muſt be houſed with the *Orange-Tree*.

Of the *Geniſta* we have ſeveral Sorts which are cultivated in *Green-Houſes*; they all love a ſandy dry Soil, and are always propagated from *Seeds*; for *Cuttings* will not take Root: neither do I believe *Layers* will ſucceed any better. As moſt of them have few ſpongy or parenchimous Parts, they require little Water, and ſhould be houſed according to their Climates.

The *Palm* or *Date-Trees*, are only propagated by ſetting the *Date-Stones* in light Earth in *March*, and giving them the Aſſiſtance of a *Hot-Bed*; they are indeed ſlow Growers, but indifferently hardy; they grow in *Italy* without any Shelter, and I believe might be brought to ſtand abroad in *England*, after giving them Shelter for the Three or Four firſt Years.

The *Jalop-Tree* of *Carolina*, called in *Virginia Poke*, is a *Plant* that dies to the Root every *Winter*, and riſes again in the Spring to the Height of Eight or Ten Foot, having many Branches of a Red Colour; the Leaves ſmooth, and of a pleaſant Green; the Berries are like *Elder-Berries*, but grow in long Bunches ſomewhat like *Grapes*; theſe are uſed for dying Red; the young Tops are pleaſant and wholeſome, when they are well boiled, and are frequently eaten by the People of *Virginia*; but if we gather them too old, they purge and vomit violently: The *Pigeon*, and other Birds, are very greedy of the *Berries* of this *Plant*; a *Dram* of the Root dry'd and powder'd (ſays my Correſpondent) is a very ſafe and good Purge, very much like *Jalap*, and is frequently uſed by the *Indians*. This is raiſed from the Berries ſown early in the Spring on a *Hot-Bed*, and delights in a rich warm Soil: it ſhould be houſed with the *Orange*.

The *Pitchimom* or *Perſimom-Plum*, called by the *Indians*, *Putchimon*, is a *Plant* of *Virginia*, where it grows to the Size of a common *Cherry-Tree*, the Wood is white, and the Leaves very green and ſhining on the upper Side; the Fruit ſomewhat like a *Medlar*, with ſeveral Seeds in it; when it is ripe, it is ſoft and luſcious: This *Plant* may be propagated by ſowing the *Seeds* in *March*, like the former. It loves a light Soil, and little Water, and may be houſed with the foregoing *Plant*.

The *Side-Saddle Flower*, is a *Plant* growing in *Virginia* and *Carolina*, which, according to the Deſcription I have had of it, with its *Seeds*, which I have received from ſeveral Hands this Spring, is one of the moſt ſurpriſing *Plants* of thoſe Countries; it dies every Year to the Root, and riſes afreſh every Spring, putting forth at that Time a yellow Flower upon a ſlender Foot-Stalk with ſix Leaves, ſhaped ſomewhat like thoſe of the *Flower-de-luce*; upon the Top of the Stile grows a Sort of Canopy, round on the Top, like the Seat of a Side-Saddle, under which is the Seed-Veſſel, divided into ſix Cells; the Plan follows the Flower, growing about a Foot high, and ſomewhat ſhaped like a *Trumpet*; upon the Top of which is a Leaf like the Lid of a *Can*, which is, at the firſt coming up, very green, but afterwards becomes yellow, full of purple Veins; it grows in ſpongy Ground in watry Places, ſo that it muſt be ſown in Pots of Earth, as nearly imitating Bogs as can be, and ſet upon *Hot-Beds*, minding to refreſh the Earth conſtantly with Water as it begins to dry. Houſe this with the foregoing *Plant*.

*Virginian Dog-Wood*, makes a Tree about the Size of a common *Cherry-Tree*, bloſſoming early in the Spring; the Flowers are white, growing in Branches, and are ſucceeded by red Berries, which hang a long Time upon the Tree: Sow them in Pots of light Earth in Autumn, and let them ſtand the *Winter* in the *Green-Houſe*, giving them the Aſſiſtance of a *Hot-Bed* the following Spring. The *Indians* boil the Roots of this Plant in Water, which they account good to heal Wounds.

The *Saſſafras Tree* is alſo a *Plant* of *Virginia*, whoſe Figure we may ſee in *Gerbard's Herbal*, but the Deſcription is imperfect: It loſes its Leaves in the Winter, and in the Spring puts forth its Flowers of yellow Colour in Cluſters, ſucceeded by blue Berries, ſomewhat like thoſe of the *Lauruſtinus*, upon red Foot-ſtalks: Theſe Berries ſhould be ſown at Autumn like thoſe of the foregoing *Plant*; it loves a light Soil, and I believe it might be made to grow in our Woods, after it is a little hardened and uſed to our Climate.

The *Virginia Wild Crab-Tree* has Bloſſoms ſomewhat like the *Apple*, but very pleaſant to the Smell; it bears ſmall Fruit of a yellowiſh Colour, and well-ſcented, which the *Indians* preſerve in *Sugars*: This is raiſed from Seeds ſown in *March* upon *Hot-Beds*, and loves a light dry Soil; houſe it with the others of this Country 'till it becomes hardy enough to be planted Abroad.

The *Virginia Myrtle*, or *Cancel-Berry Tree*, is Ever-green and Aromatick; it bears Berries about the Size of a ſmall *Vetch*, from which is drawn the *Green Wax* which *Candles* are made of; this *Wax* partakes ſo much of the natural Scent of the *Plant*, that the leaſt Bit of it being burnt upon Coals, will perfume a whole Room. The Berries muſt be ſown at *Autumn* in Pots of black ſandy Earth, and kept continually moiſt, as well before they ſprout, as after they come up; let this be houſed with the foregoing *Plant*.

It would be endleſs to enumerate the ſeveral Trees and Shrubs of foreign Countries that are propagated in *Green-Houſes*; and I doubt not but ſuch as will mind the foregoing Directions in this Chapter, will eaſily, from Experience, diſcover the right *Culture* of whatever *Plants* they get into their Collection. In the mean time, I ſhall proceed to lay down the beſt Methods of treating ſuch kinds of Plants as abound in Juice, and are called *Succulent Plants.*

## CHAP. V.

## *Of* Aloes, Torch-Thiſtles, Melon-Thiſtles, Fig-Marygold, Houſe-Leeks, *the* Euphorbium, *and other* Succulent Exotick Plants, *their* Culture.

THE *Plants* which I deſign to treat of in this Chapter are commonly ſtyled *Succulent*, for that they are plump and full of Juice, which they chiefly gather from the Air, as by Experience we find; witneſs the *Sempervive*, a kind of *Aloe*, which will live ſome Years without Earth or Water, being hung up in a Room; and the *Sedum Arboreſcens*, which I have known to be kept after the ſame Manner for many Years; in which *Plant* it is obſervable, that againſt Rain it puts forth Roots or little Fibres ſtriking into the Air, which in damp Seaſons is thick enough to afford it that Help, and ſome Nouriſhment; but as ſoon as the Air begins to grow thinner, and is more rarified, thoſe Roots dry up before they can provide themſelves with Nouriſhment ſufficient to ſupply the *Plant* they ſpring from, which perhaps they would do, if they could enjoy that thicken'd Air three or four Months without Alteration.

The firſt kind of *Succulent Plant* I ſhall mention is the *Aloe*, which, in my Opinion, is the moſt beautiful Tribe of *Plants* belonging to the *Green-Houſe*. The moſt common Kind in our Gardens, with ſome few other Sorts, are brought from *America*; but the greateſt Varieties of them, and I think the beſt Kinds, come from *Africa*, chiefly from the *Cape of Good Hope*. *Aloes*, for the moſt Part, are compoſed of many ſucculent Leaves, long and ſharp at their Points, commonly armed with *Spines*: The Leaves ſpring immediately from the Root, and are placed in a Round, repreſenting the Rays of the Sun; from their Centre ſhoots forth the Flower-Stem, which ſometimes divides itſelf into Branches, but not always: Upon theſe *Stems* appear the Flowers, which are *monopetalous*, but oftentimes are ſo deeply cut on the Edges, that, without ſtrict Examination, they appear to have ſix *Petals*. They are moſt like the Flowers of the *Hyacinth* in their Figure; but are ſeldom ſweet-ſcented, and each Fruit has little black Seeds in it, lodged in three ſeparate *Cells*.

Some *Aloes* are Arboreſcent, inclining to make Trees, breaking forth into Branches; as one Sort which has Leaves ſomewhat ſhaped like thoſe of a *Narciſſus*, but larger, more ſucculent, and of a whitiſh Colour; but this is ſo rare, that I know not of any *Plant* of it in *England*, but what I brought with me from Abroad, and have now growing: We have other Kinds, which are ſo ſmall, that a whole Plant does not exceed the Bigneſs of a Crown-piece; ſome grow cloſe to the Ground, others are more aſpiring, and have their Crown of Leaves raiſed upon a Stem ſomewhat above the Earth: In ſhort, they are ſurpriſingly different from one another, and deſerve our Care and Admiration as much as any *Plant* whatever.

I have ſeen above ſixty different Kinds of *Aloes* in the *Phyſick-Garden* of *Amſterdam*, chiefly the Product of the *Cape of Good Hope*; ſome of them have been raiſed from *Seeds* from that Place, and others from young *Plants* riſing from the Roots, or putting forth from the *Stems*; theſe are uſed with great Tenderneſs in *Holland*; but I find they are moſt of them as hardy as any other *Plant* growing about the *Cape*; for of the forty Sorts which I have cultivated for the three laſt Years, I have not loſt one by Cold; but I find that it is Wet chiefly that injures them. In *Africa* they all grow in ſtony Places, and upon rocky Ground, therefore the Earth I prepare for them is one half ſandy Soil, and the other Rubbiſh of old Walls, well ſifted and mixed together, which contributes to keep them from rotting at the Roots; and in planting them, I obſerve always to ſet them very ſhallow in the Pots, raiſing the Earth in that Manner, that the *Plant* ſtands as it were upon a Hill, falling every way to the Edge of the Pot; ſo that when they require any Water, it may be given them, without touching any Part of the *Plant*; which, if it ſhould ſo happen, unleſs the Sun immediately dries it up, the *Plant* would be in Danger of rotting.

In the *Summer* indeed, when they are Abroad, a little Rain will not hurt them, becauſe they then cannot remain wet very long; otherwiſe, the Wet that will ſettle in the Heart of the *Plants* when the Rain falls upon them, would deſtroy them: I therefore chuſe to keep them in the Houſe till *June*, and return them thither from Abroad in *Auguſt*, to avoid the Danger of too much Moiſture, which they can hardly meet with between thoſe Months.

While they are Abroad, if the Weather be fair, they will require moderate Waterings once a Week, if the Earth is very dry: And from the Time of their Houſing, till the Middle of *October*, gentle Refreſhments may be given them in the Mornings, while the Sun is upon them, for then is the Time of their Growth: But from

*October* to the middle of *March*, or thereabouts, they muſt be kept very dry, and not have the leaſt Moiſture, though the Earth be like Powder; for they cannot diſpenſe with any Wet, till the Sun begins to grow powerful with us, and can dry it immediately. In *May* give them freſh Earth, and they may be tranſplanted at that Seaſon, but without diſturbing the Roots; but the beſt Time of the Year for that Work is the Beginning of *Auguſt*, when they will beſt be diſpoſed to make freſh Roots; and this muſt be done about ten Days before they are ſent into the Houſe, for the open Air helps them to ſtrike the Roots, as I ſhall endeavour to prove.

I once had ſome Off-ſets and Branches of *Aloes* ſent me in *May*, without any Roots; and after having let them lye in the Sun for three or four Days to dry, and heal the wounded Parts, I put them into *Hot-Beds*, according to the uſual Method; but with all the Art I could uſe to them, I found them ſenſibly declined, till at laſt they were reduced almoſt to nothing; I then ſo far deſpair'd of ſaving them, finding the *Summer* almoſt paſt, that, in the Beginning of *Auguſt*, I flung them out of my Garden careleſly, with ſome other Things that had ſuffered in the ſame Manner; but to my great Surprize, after they had lain Abroad about three Weeks, they ſtruck Roots into the Ground they lay upon, and began to ſhoot out freſh Leaves: By this Accident, I not only ſaved the *Plants*, but took ſuch Methods for the Management of others of the like Kind, that now I do not know any *Plants* in better Health than my own; and I find the beſt Seaſon for planting the Off-ſets of *Aloes*, is about the Middle of *July*, letting them ſtand abroad about ten Days, and take the Rain if poſſible; when they begin to ſtrike Root, then they may be help'd with a *Hot-Bed*, but not before. The Seeds of many Sorts ripen in *England*, and may be ſown upon *Hot-Beds* in *April.*

I obſerve that ſuch *Aloes* as put out their Off-ſets above Ground, *i. e.* from the Side of their Stems, may be made to ſet out thoſe young Shoots for Increaſe, by taking away ſome of the under Leaves which grown next the Earth; for from thoſe Places where the Leaves have grown, will always ſhoot forth young *Aloes*; but this Work ſhould be carefully done without bruiſing the Stem or other Leaves, and at ſuch a Time in the *Summer*, when the *Sun* is in its greateſt Force; for although the Leaves will eaſily peel from the Body of the *Plant* without breaking, yet there will be a Moiſture remaining about the Part they were join'd to, which would breed Mouldineſs, and be apt to rot, if it was not quickly dry'd up.

This, and all other *Succulent Plants*, are ſo ſenſible of the leaſt Bruiſe, that I have known many dye by that Accident; to pinch one ſingle Leaf will mortify a whole *Plant*, unleſs the bruiſed Part be preſently cut off.

We may ſee the Figures of many Kinds of *Aloes* in Dr. *Commelin's* curious Books of *Plants*; many of which has been given us, with their *Flowers*, and are extremely well deſigned. The more hardy this Kind of *Plant* is kept, the more apt it is to flower, which I know from Experience, having not leſs than twelve Sorts, which bloſſom with me every Year.

The *Torch-Thiſtle* or *Cereus* is a Plant very different from any other *Tribe of Plants*, in that it never bears any Leaves. I have cultivated about ſeven Sorts of it, without reckoning thoſe other Kinds of *Torch*-like *Plants*, which have milky Juice, and are reckoned of the *Euphorbium* Race. I do not yet find that any of the *Torch-Thiſtles* grow in any other Part of the World but in *America*; nor can I learn that the *Euphorbium* are found any where naturally growing but in *Africa*. The *Torch-Thiſtle* are of two Sorts; ſome creeping upon the Ground, and the others growing upright to a great Height, without Support. The creeping Kinds are more inclining to branch than the others, and take Root eaſily as they run upon the Ground: The Branches of the creeping Kinds are differently ſhap'd, in that one Sort, pretty common in *England*, has a triangular Branches, and the other has its Sprouts divided into ſix or ſeven Angles; both theſe have the Edges of their Angles adorn'd with ſmall tender Spines ſet together in the Form of Stars. The Flowers of the firſt I have not yet ſeen, but the latter has bloſſom'd in *England*, which yet perhaps it would not have done without an Accident: A large *Plant* of it that ſtood in the Neighbourhood of a plaiſter'd Wall, ſtruck its Roots into it, and ſoon after, dying at its firſt Root, it remain'd ſome Time nouriſh'd by the Wall only, and in that Condition ſet for Flowering: The Bloſſoms were very large, radiated ſomewhat like the *Sun-Flower*, many of the *Petals* were of a yellow Colour, with ſome few, towards the Middle, of a fair White. This Flower ſtood upon the Summit of the Fruit, like thoſe of the *Indian-Fig*; and when it opened, was extremely well ſcented, but ſoon decayed. Whoever conſiders that this *Plant* grows naturally upon Rocks, will not wonder at its Flowering when it grew in Lime-Mortar, which comes the neareſt to the rock Soil of any we can compoſe.

I have therefore choſe to plant both theſe creeping Kinds of *Torch-Thiſtles* in Rubbiſh of old Walls mix'd with about one Third of ſandy Soil, and ſome ſmall Pieces of Free-ſtone among it; for this Mixture will keep the Roots dry, and grow hard as a Rock, after it has been well water'd: Theſe are both raiſed from Cuttings planted in this Mixture any Time between *May* and the End of *July*; but we muſt firſt obſerve, that they lye in the Sun for a Day or two after they are cut, to heal their Wounds, and not put them into the Ground before they are dry'd, which we muſt alſo remember to do with all Cuttings of *Succulent Plants*. Plant theſe as I direct for the *Aloes*, upon a little Hill in the Middle of the Pot, for they can hardly endure Water: Let them, after Planting, ſtand abroad about twenty Days to take Root before they are put into the *Hot-Bed*, for elſe they would be apt to ſhrink; and at firſt putting them in Pots, water them to ſettle the Earth, but with this Caution, that it be done when the Sun has Power enough to dry and harden the Mixture they are planted in. During the Summer, they may now and then be gently refreſhed; but from the Middle of *September* till *May*, I would not adviſe any Water: Some have planted them in light ſandy Soil, and they have ſhot well in the *Summer*, but would ſeldom live till the *Spring*: In a Word, keep them as dry as poſſible in the *Winter*, and let them have the open Air after Rain eſpecially in the *Summer*, as much as you can give them; for 'tis what they chiefly feed upon, as we may know by their putting out of long Roots from their Branches at ſuch Seaſons. This Kind of Plant comes from thoſe Parts of *America* near the Line, therefore are not ſo hardy as *Aloes*, and ſhould be kept more in the Houſe, and ſet in the warmeſt Places.

The *erect* or *upright Kinds*, have generally much larger Stems or Branches than the others, and the *Spines* upon their Edges very ſtrong, which are various in their Length and Colour, as the *Plants* they belong to are different; and the ſeveral Kinds of this *Plant* likewiſe differ in their Colour and Number of *Ribs* or *Angles*. The upright Sort, as I obſerve, never offer to put out any Branches, as long as their firſt Stem can preſerve its Top from Damage; but as ſoon as that is cropp'd or injured, then they commonly put forth freſh Shoots near the Place where it was cut or broke off, about three or four in Number, which grow upright. Sometimes the *great upright Torch-Thiſtle* will continue growing in one Stem 'till it be near twenty Foot high, without putting out any Buds but thoſe for Bloſſoms: The Flowers are radiated with whitiſh *Petals*, which do not open 'till the Fruit upon which they ſtand, ſeems to be full grown. This Kind, as well as the others of this Tribe, is eaſily raiſed from Cuttings planted in any of the *Summer* Months, but beſt in *May*: To cut a Stem of any of them into Pieces of ſix, or ſeven Inches long, and let them lye in the Sun 'till their Wounds are dry; every Cutting will ſoon take Root, if they be ſet in Pots of light Earth, and kept pretty dry, 'till they begin to ſhoot, and then ſome of the Mixture prepared for the creeping Kinds ſhould be put to their Roots, and as much of the light Earth as poſſible taken away: The Reaſon why I do not chuſe to plant them in this Mixture at firſt, is, becauſe the Roots will more readily form themſelves in the other Earth. When theſe *Plants* begin to grow, they will put out little Buttons near the Tops, which will afterwards form ſo many Stems, excepting only that Cutting which was the running Top of the *Plant*, and that will ſhoot upright. When the little Stems are about four or five Inches long, they may be cut; and after drying in the Sun, be planted like the others.

I can ſay no more concerning theſe *Plants*, than I have done of the creeping Kinds, unleſs it be, that what I call the *great upright Torch-Thiſtle* is eaſily preſerved in any *Green-Houſe*, and is not ſo hard to be kept as the others; that is, it will thrive better in a plain ſandy Soil, than in the Mixture I have preſcribed for the others of this Tribe, and will bear more Water in the *Summer*. The Figures of all theſe Kinds, I think, are no where cut but in my *Hiſtory of Succulent Plants*.

The *Melon-Thiſtle*, or *Echinomelocactos*, is a very wonderful *Plant*; I have had only two Sorts of it, *viz.* the large Kind growing in *St. Chriſtopher's*, and other *Caribbee-Iſlands*, which is cut in *Gerard's Herbal*; and the ſmall Kind which is figured in the *Paradiſus Batavus*, named in that Book, *Echinomelocactos minor Lacteſcens abſque tomento Cylindris Strictioribus*.

The firſt is a ſolid Plant, growing out of the Ground like the Fruit of a large *Pumkin*, but ribb'd like a *Melon*, and very green; upon the Edges of each Rib are long Star-like Thorns, placed one above another, of a *Chocolate* Colour: On the Top of this Melon-like Plant, grows a large Lump of a Cotton-like Subſtance, cover'd over on the Out-ſide with ſhort tender *Spines* of a *Cinamon* Colour; out of this burſts forth the Fruit (in a hot Day) full ripe, about the Size and Colour of *Cornelian Cherries*, and commonly drop off two Hours afterward. There is now one of theſe Plants in the *Stove* at *Hampton-Court*; it is called in *Barbadoes*, *Pope's-Head*, or *Turk's-Cap.*

The other Sort ſeldom exceeds the Bigneſs of a large *Apple*, growing out of the Ground like a ſolid Fruit, and covered over with little Knots, ſomewhat reſembling green *Barberries* ſet cloſe together, and little Stars of Thorns at their Points, of a *Cinamon* Colour; the Fruit of this, like the former, cracks out in hot Weather, full ripe, of the Shape and Colour of a ripe *Barberry*; but theſe remain upon the *Plant* a long Time. I could have been more particular about the Deſcription of theſe ſtrange *Plants*; but as they will be engraved and deſcribed in my *Decades of ſucculent Plants*, I ſhall therefore refer my Reader to that Account of them.

Theſe both grow upon Rocks in *America*, near the *Line*, ſo that they are very tender; but being humour'd in their Way with a proper Soil, and kept dry, may be preſerv'd as well as the *Torch-Thiſtles*. I have raiſed the ſmall Kinds from Seeds ſown in *Lime* Rubbiſh, which I afterwards preſerved for ſome Time, but they were not hardy enough to reſiſt the hard *Winter*. The beſt Way to provide ourſelves with theſe *Plants*, is to have them brought from *America* well grown, and kept without Water during their Paſſage.

The *Indian-Fig*, or *Prickly-Pear*, is call'd *Opuntia*, and *Ficus Indica*; there are many different Kinds of this *Plant* chiefly growing in *America*, from whence I have had about eight or nine diſtinct Sorts: This Race of *Plants* are ſaid to grow one Leaf out of another, but they are rather Branches than Leaves; the Leaves properly being thoſe little Buds which appear always on thoſe Parts where the Thorns afterward put forth. However, ſince what I take to be Branches have generally been called Leaves, I ſhall yet continue that Name to them. This Tribe of *Plants* then, differ chiefly from one another in the Size of their Leaves, the Colour of their Flowers and Fruit, and the Length and Colour of their Spines; the Leaves of all of them are generally of an Oval-Figure; ſome Sorts have them near a Foot in Length; and others not more than two or three Inches; their Leaves are generally ſet with Knots of Thorns at certain Diſtances; ſome ſo very long, that the *Indians* make Uſe of them as Pins: Others have the Thorns ſo ſhort, that they are hardly to be perceived, and thoſe ſmall Thorns make the *Cow-Itch*, and can hardly be got out of one's Fleſh in a Month, if they are not carefully ſought after at firſt: In this Tribe the Fruit always appears before the Flower; and when it ſeems to be full grown, the Bloſſom opens at the End of it, with about ten *Petals* and a Cluſter of *Chives* in the Middle: This Flower always opens in the Heat of the Day, and ſhuts up when the *Sun* leaves it: When the Fruit is ripe it is generally of a ſtrong red Colour, and has this Singularity in it, that if it be eaten, it will make the Urine of the Perſon as red as Blood, but without any ill Effect; the Flowers are commonly yellow, except one Sort which bears ſcarlet Bloſſoms, and is more tender and hard to be kept than any of the others, and very apt to rot: Some of them delight to creep upon the Ground, others grow more upright; but all of them delight in ſtony Places and Rocks, therefore I give them Earth made with Lime-Rubbiſh and ſandy Soil in equal Quantities, planting them in Pots, as I do the *Aloes*, upon little Hills raiſed above the reſt of the Earth; they may, for the moſt Part, be watered like the *Torch-Thiſtles*, and ſhould have Warmth anſwerable to the Climates they come from. We have a ſmall Sort which comes from *Italy* with round Leaves, that will ſtand abroad all *Winter*, and bear Fruit plentifully; and the *Carolina* Kind, and the *Virginia* Sort, will likewiſe live out of Doors under the Shelter of a warm Wall; theſe are all raiſed by planting ſingle Leaves about two Inches deep, in Pots of the prepared Earth, (after their Wounds are dry'd) and letting them ſtand abroad 'till they ſtrike Root, before they have the Help of a *Hot-Bed*: And I obſerve, to ſet them upon Leads, or ſome Stone Pavement, expoſed to the Sun, contributes to make them ſhoot with greater Vigour: The Plantations of the Leaves ſhould be made in the *Summer* Months, and they ſhould be houſed with the *Aloes*.

The *Ficoides* is a *Plant* ſo different from other Kinds, that Authors have greatly varied in the Name of it; ſome eſteem it like the *Criſanthemum*, or *Corn-Marygold*; others make it a Diminutive of the *Opuntia*, or *Indian-Fig*, and, indeed it has this Likeneſs to the latter, that the Fruit is always formed before the Flower opens, and is not unlike a *Fig* in its Shape: The Flower is radiated ſomewhat like the *Marygold*, and therefore the *Engliſh* Name I gave it in my *Decades* of *Succulent Plants*, is *Fig-Marygold*, which in my Opinion, is a Name, in our Language, as proper for it as *Ficoides*. The Leaves of this *Plant* are always ſucculent, and it is rare to find one in this numerous Tribe that has not conjugated Leaves, that is, Leaves ſet on in Pairs at the Joynts.

In the *Culture* of fifty Sorts of this *Plant*, I do not remember to have met with one that was not a Native of *Africa*, chiefly about the *Cape of Good Hope*, from whence we receive them; they commonly grew in ſtony or rocky Ground, in ſuch Places where they have not much Wet, and are eaſily propagated either from *Seeds* or *Cuttings:* The *Seeds* may have the Help of a moderate *Hot-Bed*, if they are ſown early in the Spring; but the Cuttings being planted in a natural Bed of Earth in *May*, will proſper very well, and be fit to put into Pots the *Auguſt* following, in which Condition, they may yet remain abroad 'till about the 20th of *September*; for they delight in the open Air, and are not eaſily overcome with ſmall Froſts. As to the Time of their Duration, I find many of the ſhrub Kinds require to be renewed every ſecond or third Year, and likewiſe the running or creeping Kinds; for *Plants* of three Years old often drop off; or, if they live, are generally ill-ſhapen and ragged. It is practiſed in ſome Places, to raiſe theſe Cuttings upon a Bed made with *Tanner*'s-Bark, which is a Mixture that affords a gentle Heat for three or four Months, without ever burning; therefore it would be of great Uſe to raiſe young *Orange-Trees* upon, or other ſmall *Plants*. Some Kinds of this *Plant* are *annual*, and therefore muſt be raiſed from Seeds every Year; as one Sort eſpecially, which of late has been pretty frequent among us; it has, at firſt coming up, Leaves ſomewhat like thoſe of the *Arrow-Head*, covered with little Bliſters of clear Juice, which appear like ſo many *Diamonds*, and give a notable Luſtre when the *Sun* ſhines upon the *Plant*; but as this *Plant* grows bigger, the Leaves grow ſmaller, and change their Figure; it puts out many Branches covered with tranſparent Bliſters, and bloſſoms about *September*, bearing ſmall white Flowers. But this, like other *Annuals*, will ſtand the *Winter*, if we raiſe young *Plants* of it about *July* or *Auguſt*, that do not attempt to bloſſom in three or four Months.

There is another Claſs of the *Fig-Marygold*, which are *Dwarfs* and *Aloe-formed*, growing always near the Ground without branching; moſt of them will remain five or ſix Years, without renewing, but may perhaps be ſubject to loſe ſome of their Leaves lying next the Earth, if the Surface of the Earth is not covered with ſifted Lime-Rubbiſh, which contributes to ſuck up the Wet, and keep the Leaves from rotting; theſe Dwarf Kinds have commonly the moſt ſucculent Leaves, and therefore are more endangered by Wet than the others; ſo that I always plant them upon little Hills in the Middle of the Pots, as I have adviſed for the *Aloes*: So likewiſe ſome of the creeping Kinds, that have very ſucculent Leaves and tender Stalks, ſhould have the Top of the Earth they run upon, cover'd with a thin Coat of Lime-Rubbiſh, or Sea-Coal Aſhes, to prevent their rotting by too much Wet: The Earth, for every Kind of this *Plant*, ſhould be light and ſandy, with about one fourth Part of Rubbiſh among it.

The *Shrub* Kinds, which have their Stalks woody, will bear moderate Waterings; but the others, which are moſt circulent muſt have very little Water. This Tribe of *Plants* ſhould always have the Advantage of the *Sun*, for they will never open their Bloſſoms without it, excepting two or three Kinds, which only Flower in the Night. As I have already publiſhed the Figures of many of theſe *Plants*, and am ſtill about engraving many more of them in the *Hiſtory* of *Succulent Plants*, ſo I ſhall refer my Reader to that Work for their particular Forms and Uſes. The *Cuttings* of theſe *Plants* ſhould not be planted before their wounded Parts are dry.

We have great Varieties of *Sedums*, or *Houſe-Leeks*, from the *Cape of Good Hope*, which are not leſs beautiful than the *Fig-Marygolds*, and are eaſily propagated by the ſame Means. Dr. *Commelin* has given us the Figures of ſeveral of them among his *Amſterdam Plants*, and therefore I ſhall ſay little relating to them; but the *Tree-Kind*, or *Sedum Arboreſcens*, which is the largeſt of them, I cannot well paſs by, without taking Notice of it, as one of the moſt beautiful *Plants* belonging to the *Green-Houſe*, eſpecially that Sort of it which has its Leaves variegated with Green and Yellow, and alſo has very often thoſe Leaves tipp'd with Purple: It loves a light ſandy Soil, and is eaſily propagated from Branches ſet in the Earth in any of the *Summer* Months, giving them very little Water, and as much Air and Shade as poſſible in the *Summer*, and no Water at all in the *Winter*. I obſerve the Method I preſcribe for them in the *Summer*, contributes to make them more beautiful in their Leaves than thoſe that are drawn under Glaſſes, or expoſed to the *Sun*, which is a common Error: In a Word, every *Plant* that feeds upon the Air, as this does chiefly, muſt be treated in the ſame Manner, if we have a Mind to keep them in their beſt Colours; for too much *Sun* to *Aloes*, and ſuch like *Plants*, is apt to change the Colour of their Leaves.

The greateſt Varieties of the *Euphorbium* that I have yet ſeen, are in the *Amſterdam Gardens*; they are in Shape, and Manner of Growth, very like the *Torch-Thiſtles*, but have not Star-like *Spines*; however, they do not want ſome Thorns to defend their Edges, which vary in their Figures as the *Plants* are different: All this Race abound in poiſonous milky Juice, which flows from them in great Abundance when they are wounded; ſo that the Cuttings taken from them for Increaſe, muſt be well dry'd in the *Sun* before they are put into the Earth. The Mixture which I direct for the *Torch-Thiſtles* is the moſt proper for this Kind of *Plant*, which delights in rocky Soil, and requires very little Water: Theſe are moſt of them very tender like the *Torch-Thiſtles*, and may be kept in the Houſe all the Year about, and ſtand in the warmeſt Place of it: We may raiſe them in any of the *Summer* Months with the Help of a *Hot-Bed.*

The *Frittilaria Craſſa* is a ſmall creeping *Plant*, imitating in the Manner of its Growth, the *Torch-Thiſtles*, ſhooting one Branch out of another: It has neither Spines nor Leaves, that ever I could diſcern, but bears very large Flowers about four Inches over, ſpeckled with Black and Yellow, like the Belly of a Toad; and one Sort has its *Petals* cover'd over with purpleiſh Hair or Wool: Theſe Flowers, when they open, have a very ungrateful Smell like *Carrion*, and ſoon are cover'd with little *Inſects* about the Centre of their Bloſſoms. The Stems of the ſmalleſt Sort are generally of a browniſh Colour; but the larger Kind has its Stems very green, if the *Plant* be in Health: See the Figures of both theſe Kinds in the *Hort. Lugd. Bat.* and Dr. *Commelin*'s Book of *Amſterdam Plants:* we may eaſily propagate theſe *Plants* by planting their Branches in a natural Bed of Earth, any Time between *June* and *Auguſt*, and they will ſoon be fit to plant into Pots; the moſt proper Earth then for them, is that directed for the *Aloe:* Theſe *Plants* are very apt to rot, and therefore muſt be kept dry in the *Winter*, and have a warm Place in the *Green-Houſe.*

I have now given my Reader ſufficient Inſtructions for the propagating ſuch *Plants* as are both delightful and profitable in a Garden; and if he ſhould meet with other Kinds than thoſe I have mentioned, I doubt not but he may readily cultivate them, if he diſcreetly conſults the Directions I have given him in this Work.

Plate I

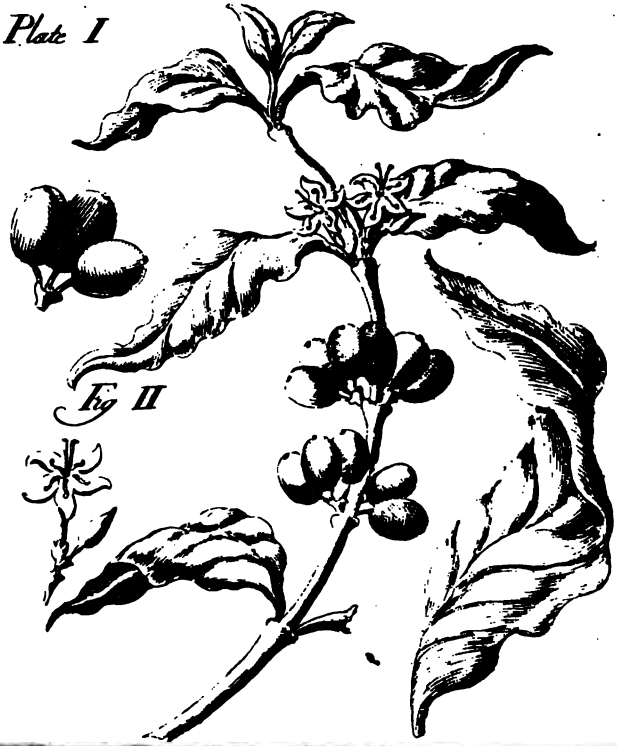

Fig II

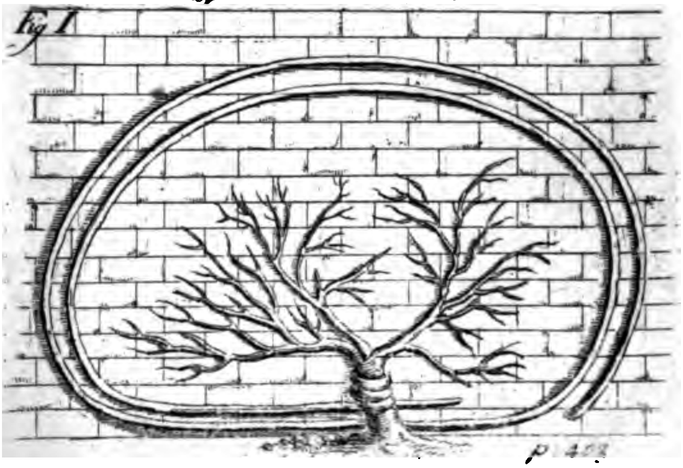

Fig I

p. 408

# Monthly DIRECTIONS
For ordering the
# KITCHEN-GARDEN
And for the Management of
# FOREST-TREES.

## JANUARY.

THIS Month is commonly froſty; and if we have any great Snow in the Courſe of the whole Year, it is about this Time. In this Month the *Thames* has been three Times frozen within the Space of forty Years, ſo as to be covered with Booths, bear the heavieſt Carriages, and even to remain in that State for ſeveral Weeks: And it is obſervable, that the moſt piercing Cold reigns chiefly at this Seaſon: Therefore whatever is nice and curious in our Gardens, muſt now be diligently look'd after, eſpecially thoſe *Plants* which are in *Hot-Beds*, by taking proper Means to defend them from the cold Air, and covering the Glaſſes a little before Sun-ſet with Litter and Mats.

If a Gardener has any *Cucumber* or *Melon-Plants* in his *Hot-Bed*, he muſt be careful to give them Sun through the Glaſſes at every Opportunity, the better to keep them from the Injuries they will be apt to receive from the Steam of the Bed; for the Steam of the Dung, riſing in a great Quantity at this Seaſon, condenſes upon the Glaſſes, and then dropping upon the tender Plants, rots them.

This injurious Steam may be corrected two Ways; *Firſt*, By allowing at leaſt ſix Inches thick of Earth to cover the Dung; and, *Secondly*, By contriving Frames of Woollen Cloth to ſlide in under the Glaſſes, which will receive the Steam that ariſes in the Night, and may be drawn out and dry'd every Morning, without any Injury to the *Plants*.

The Damps being corrected in this Manner, the Heat of the Beds may be recruited or preſerved, by laying hot Dung to their Sides every fifteen or twenty Days.

Sow *Cucumber* and *Melon Seeds* on the *Hot-Beds* every Week, leſt by ſome Accident the firſt *Plants* are loſt.

Sow ſmall *Sallads* upon declining *Hot-Beds*, *viz.* *Muſtard*, *Radiſh*, *Creſſes*, and *Lettuce*, allowing them what Air the Seaſon will permit, when they are come up, for 'tis Air that gives them their right Taſte.

Plant *Strawberries* upon a moderate *Hot-Bed* to make them bear Fruit betimes, but keep them not too tender.

If you have not yet planted any *Minth* upon *Hot-Beds*, 'tis now a proper Time to do it, that it may not be wanting in the *Sallads* of this Seaſon.

Make a *Hot-Bed* for *Aſparagus* to ſucceed that made in *December.* [See my *New Improvements*, Part III. under that Head.]

If the Weather be froſty, bring into the Garden ſuch Manures as are neceſſary to enrich the Ground.

Continue to prune large *Orchard-Trees*, taking away the luxuriant Branches cloſe to the Stem, and ſuch as grow diſorderly.

Towards the latter End, gather *Cions* for Grafts, from good bearing Trees, and lay them half way in the Earth till Grafting Seaſon, or if they are to be ſent to a remote Place, ſtick their Ends in Clay, and bind them together with a dry Straw-band.

It is now a good Time to remove large Trees, if the Weather be froſty; for then the Clod of Earth about the Roots will remain entire, without falling from them.

In open Weather, continue to trench Ground, laying it in Ridges till you uſe it.

Now alſo is a good Time to compoſe Earth, by mixing ſeveral Soils together of different Qualities, as Sand with Clay, *&c.* for ſuch Soils are to be coveted before Dung, for *Trees* or other durable *Plants.*

Give freſh Earth to your *Sage*, *Thyme* and other ſweet Herbs, taking Care that their Roots are not diſturbed.

Uncover the Roots of *Trees* that are too luxuriant, cutting off ſome of their large Roots, as well to curb their too great Vigour, as to prevent their too early Bloſſoming.

If in the preceding Month your *Strawberries* have not been dreſſed with freſh Earth, that Work muſt be no longer delay'd.

Towards the End, if the Weather be open, tranſplant all Sorts of *Timber-Trees*, having firſt prepared the Places for them, by digging and looſening the Earth; and, if neceſſary, mixing it with different Soil.

In wet and heavy Ground raiſe Banks of Earth, a convenient Height, to plant your Trees upon; but in dry ſandy Ground that Labour may be omitted.

In planting of Trees have due Regard to the Manner of the Roots, that thoſe which naturally ſpread near the Surface, be not planted too deep, but, as near as may be, imitate Nature in this and all other Garden-Work.

In planting Trees for Timber, always preſerve the leading, or upright Shoots of the Trees, pruning off only the collateral Branches cloſe to the Stem.

Chuſe rather to plant ſmall Trees than thoſe of a large Size; a few Years will reward your Wiſdom in ſo doing; for where Trees have ſtood long enough in one Soil to become large and ſtately, they are hardly to be reconciled to any other, though they could be tranſplanted without any Loſs of their Roots.

Conſider well the Soil and Expoſure proper to each Tree you deſign to plant, and be not over-haſty in cultivating any particular Tree you moſt admire, without the Place be agreeable to its Nature; for 'tis the Want of ſuch Conſideration which has confounded many chargeable Plantations.

Sow ſome *Hotſpur Peaſe* to ſucceed thoſe ſown in *November*; alſo ſet *Spaniſh Beans* in the open Field.

Set Traps for Mice and other Vermin, which are now very buſy about your young *Peaſe*, and thoſe you have newly put into the Ground.

Plant *Cabbages*, *Turnips*, *Parſnips*, and *Carrots* for Seed.

Make up and enrich your *Hop-Hills*, allowing the Space of ſix Foot between the Centres of the Hills, raiſing each Bank a Foot higher than the Paths, if the Ground lye wet, or about half as much if it be dry; make them flat on the Tops, and about two Foot over, working the Earth very fine, to prepare it for planting the next Month; but if the *Hop-Garden* is already made, it is now the Seaſon to lay Manure about the Edges of the Hills, and to lay upon them a thin Covering of freſh Earth.

## *Products of the Kitchen Garden in* January.

C*HARDONES* are yet in great Perfection.

Roots preſerved in Sand, which are now in Uſe are *Carrots*, *Parſnips*, *Beets* both *Red* and *White*, and *Potatoes*, with ſome *Skirrets*.

Roots yet remaining in the Ground are *Scorzonerra*, *Turnips*, *Horſe-Radiſh*, and ſome young *Carrots*, which were ſown in *July*.

The Roots kept dry in the Houſe are *Onions*, *Garlick*, *Shallots*, *Rocambole*.

We have yet ſome *Artichoaks* in the Houſe, which were preſerv'd by ſetting their Stalks in Sand.

Herbs for boiling are *Boor Cole*, *Savoy Cabbages*, *Sprouts* of *Dutch*, and *Batterſea Cabbage*, *Red*, and the *Ruſſia Cabbage*, and *Spinach*.

Herbs for Soup, and other Kitchen Uſes are *Parſley*, *Sorrel*, *Chervil*, Leaves of the *White Beet*, *Leeks*, *Thyme*, *Sage*, *Winter-Marjoram*, *Clary*, *Sellery*, and by ſome are uſed the Tops of *Green-Peaſe*, and of *Aſparagus*.

Dry'd Herbs for Houſhold-Uſe are *Marygold Flowers*, *Sweet-Marjoram*, and dry'd *Minth*.

Sallads for this Month are compoſed of the Tops of *Minth*, young *Creſſes*, *Muſtard*, *Radiſh*, young *Lettuce*, young *Onions*, *Sellery*, and *Endive*, the Tops of *Burnet* and *Chervil*; to which Mixture we may add a *Cabbage-Lettuce*, preſerved under Glaſſes, or ſome of the *Dutch Brown Lettuce*, which was ſown abroad at the End of *Auguſt*, and is now a little curl'd, and very agreeable among *Sallad Herbs*.

We have Plenty of *Aſparagus* upon the *Hot-Bed* made for that Purpoſe in *December*.

## *Works to be done in the Kitchen-Garden in FEBRUARY.*

THIS Month has been commonly reckoned the wetteſt in the whole Year: And I have obſerved, we rarely have any laſting Froſt begin at this Seaſon; but have taken Notice, that when *January* has given us a good Share of Froſt and Snow, the Weather in this Month is commonly warm and pleaſant; and if that happen, 'tis an admirable Time for planting of Trees, either for Fruit, Timber, or Ornament, if thoſe Works were not compleated in *September* and *October*.

*Elm-Sets* ſhould now be gathered from the Roots of large Trees, and planted in Nurſery-Beds, and young Plantations provided of all Sorts of *Foreſt-Trees* and *Shrubs*, which are propagated from Slips or Layers.

Set *Acorns* of the *Ilex*, *Cork-Tree*, and *Engliſh Oak*, *Cheſtnuts* and *Walnuts*, and ſow the *Samera* of the *Elm* and *Bay-Berries*, all which come up the firſt Year.

Sow the Maſt of the *Aſh*, *Beech*, and ſuch other Timber Trees as has been prepared a Year in Sand, for elſe they will be two Years in the Ground; as alſo the Berries of the *Hawthorn*, *Yew*, *Holly*, and ſuch *Evergreens* prepared as above.

What I here mention concerning the preparing of Seeds in Sand, is the common Practice of the Gardeners; but I am informed by Mr. *Furbor*, a Nurſery-Man at *Kenſington*, that he ſow'd *Holly* and *Yew-Berries*, which were two Years old, and had not been prepared that Way, which came up the firſt Year without Difficulty: And he adds, That he gathered *Aſh-Keys* in the Spring, and ſowed them immediately, and they came up in like Manner; which I have done with the like Succeſs: But this is nothing extraordinary, ſeeing that the *Aſh* will frequently hold its *Keys* two Years, without letting them drop, and at that Age they are prepared of themſelves to grow without any Artifice.

Another has told me, that *Holly-Berries* being gather'd, and laid in a large Heap in the Houſe, without ſtirring them 'till Spring; then thoſe which lye in the Middle of the Heap, will not only be void of their Pulp, or fleſhy Part, but be ſprouted; and then being immediately ſown, will come up in a Month's Time. This may happen perhaps from the Ferment which the Berries would raiſe when they began to ſweat; and it is from the ſame Reaſon I have recommended the Tryal of the Bran and Water, in my *New Improvements*, Part II.

Prune and nail your *Apricots* and other Stone-Fruit at the Beginning of the Month, and laſt of all your *Nectarine.*

About the Middle of the Month, ſow *Beans*, *Peaſe*, *Parſley*, *Spinach*, *Carrots*, *Parſnips*, ſome *Turnips*, *Scorzonerra*, *Onions*, *Leeks*, ſome of the *Dutch Brown Lettuce* and *Radiſhes.*

Sow *Skirrets* in light, rich Ground, where they may have ſome Moiſture. It is held by ſome, that when the Roots are about two Inches long, they ſhould be tranſplanted, to make them large.

Plant *Garlick*, *Shalots*, and *Rocambole*, for Increaſe, in light Ground.

Set *Potatoes*, and *Jeruſalem Artichoaks.*

Tranſplant young *Cabbage-Plants* for a Crop, if that Work was not done in the preceding Month.

Sow *Aſparagus Seeds* in the natural Ground.

Towards the End, begin to graft in the Cleft, *Apples*, *Pears* and *Cherries.*

Renew the Heat of your Hot-Beds with freſh Dung, and continue to ſow *Cucumbers* and *Melons* every ten Days, for fear of Danger from the Weather.

Now alſo make a Hot-Bed for all Sorts of Annual Seeds, except *African*, and *French Marygolds*, which may remain unſown 'till the next Month, otherwiſe, they would grow too big for the Frames before the Weather would permit them to ſtand Abroad.

Sow ſome of the *Batterſea Kidney Beans* upon a Hot-Bed, to have *Beans* in *April*, and raiſe ſome *Purſlane* upon Hot-Beds.

Now it is proper Time to make a *Muſhroom* Bed, covering it with Litter, at leaſt eight or ten Inches thick; the *Muſhrooms* will begin to appear in a Month's Time after making the

Bed, if the Dung is not covered too thick with Earth.

Plant *Hops* this Month, ſeven Plants on each Hill; obſerving, that each Set or Plant has not more than two Joints; for if they were to have a greater Number, the Shoots would be too weak.

Now make a large Hot-Bed for forward *Radiſhes* and Spring *Carrots*, which may be ſown together, for the *Radiſhes* will be fit to draw in *March*, and be quite gone before the *Carrots* begin to ſwell: This Bed muſt be cover'd about eight Inches thick with Earth, and defended from the Weather with Mats, ſupported upon Hoops; for Frames and Glaſſes would draw the *Carrots* too much into Leaf.

Sow ſome *Collyflower Seeds* towards the Middle of the Month, upon ſome declining Hot-Bed.

Towards the End, ſow *Parſley*, in the natural Ground.

Make Plantations of *Strawberries*, *Raſberries*, *Gooſeberries*, *Currants* and *Roſes*.

Plant yet *Vines* and *Figs*, *Honyſuckles*, *Jeſſamines*, &c.

## *Product of the* Kitchen-Garden *in* *FEBRUARY.*

WE have yet ſome *Chardones*.

We have ſtill ſome *Turnips*, *Parſnips*, *Beets*, *Potatoes*, *Skirrets*, *Scorzonerra*, with ſome young *Carrots* ſown in *July*.

*Aſparagus* in Hot-Beds now much better than in the preceding Month.

The Herbs for Kitchen Uſe are thoſe mentioned in *January*.

Herbs for boiling, are *Red Cabbages*, *Sprouts* of *Cabbages*, and ſome few of the *Savoy-Cabbages*, *Spinach*, and the Leaves of the *White-Beet*.

Sallads of this Month conſiſt of the ſame ſmall Herbs as in the preceding; but we may now add *Water-Creſſes*, and blanch'd *Dandelion*.

The *Cucumbers* ſown in *October*, if they have withſtood the Rigour of e *January* Froſts will towards the End yield us ome Fruit; and the *Kidney-Beans* which are ſ n at the ſame Time, will now afford us Plent f *Beans*.

Some *Cherries* are com nly ripe this Month, at Mr. *John Millet*'s, a cu ious Nurſery-Man at *North-End* near *Fulham*, a d green *Apricots* may be now found at the ſame Place.

## *Works to be done in the* Kitchen-Garden *in* *MARCH.*

THIS Month is generally attended with white Froſts in the Nights, haſty Storms of Hail and Rain, and the Winds from the *Eaſt* and the *North-Eaſt* are now very hurtful to our bloſſoming Fruit-Trees. The Showers which fall at this Seaſon wound and bruiſe ſuch tender *Plants* as ſtand Abroad; ſo that a Gardener muſt now be very watchful to defend and ſhelter his Trees and Plants from the Injuries of the Weather. The Sun has now great Power over Plants, when it is not interrupted by Storms; and the piercing Winds concurring with the hot Gleams which are now frequent, ſcorch and rivel the tender Shoots of ſuch Plants as now begin to ſprout unleſs they be happily guarded. All young planted Herbs or Trees ſhould be carefully water'd, altho' we have many briſk Showers at this Time, for they reach not deep in the Ground; and we muſt obſerve, that whatever we water now, muſt be in the Morning, for elſe the Froſts coming too ſuddenly upon the new water'd Plants, would chill their Roots.

If we have omitted any of the Works directed to be done in the former Month, they muſt not any longer be delay'd; for by the End of this Month our Garden ought to be compleatly cropp'd.

Continue to ſow *Radiſh*, and *Sileſia*, *Imperial*, and *Cabbage Lettuce* among all the Crops you put into the Ground, for they will come to Perfection, and be gathered before the other Roots and Herbs cover the Ground.

Sow *Scorzonera*, *Salſify*, and ſlip *Skirrets* of the laſt Year, leaving only the tender Fibres, aud not any of the greater Roots about the Plants.

Sow *Peaſe* and *Beans*.

Make Plantations of *Minth*, *Balm*, *Pennyroyal*, *Thyme*, *Savory*, *Sage*, *Tanzey*, *Rue*, and other durable Herbs for Houſhold Uſe, except *Lavender* and *Roſemary*, which will grow better if they are ſet in *April*.

Plant out ſome *Collyflower* Plants to ſucceed thoſe planted in *Autumn*.

Toward the Middle, rake and dreſs your *Aſparagus-Beds*, for early in *April* the Buds will begin to appear above Ground; and therefore if we delay this Work 'till the End of *March*, many Buds muſt then neceſſarily be broken off.

To make new Plantations of *Aſparagus* in the natural Ground, firſt trench the Earth, and lay a good Coat of Dung at the Bottom of the Trench, covering it over with Earth, about ſix or eight [illegible] and when the whole Piece is thus prepared and levelled, begin your Plantation, allowing ten Inches Diſtance between the *Aſparagus Plants*, and four Lines of *Plants* in each Bed, leaving two Foot between the Beds for the Alleys, and then ſow the whole with *Onions*.

Sow young *Sallads* in ſome warm Place, adding to the ſmall Herbs of the laſt Month *Spinach*, *Rape* and *Sorrel*.

Sow *Cabbages* and *Savoys* for a Winter Crop, and ſome *Sellery* for early blanching: Sow alſo ſome *Collyflowers* on a declining Hot-Bed.

Sow *Chardones* to tranſplant the next Month.

Now dreſs the *Artichoaks*, leaving only three or four Suckers on each ſtrong Root, ſlipping off the reſt for tranſplanting and making good the Defects in the old Plantation.

Refreſh the *Cucumber* and *Melon* Beds with hot Dung, and ſow now for a full Crop.

Tranſplant *Lettuce* for Cabbaging, and to ſtand for Seed. Carefully ſtake up all new planted Trees, to defend them from the Violence of the Winds, which now reign.

We may yet plant *Timber-Trees* of all Sorts, watering them well as ſoon as they are planted.

Sow the Seeds of the *Scotch Fir*, a *Plant* much neglected in *England*, but of admirable Uſe and quick Growth, They will thrive beſt in ſandy Soil, ſuch as are moſt of our Heaths in *England*. The Roots run near the Surface, therefore they will not bear planting deep. If any affirm they will grow in a ſtiff Soil, I acknowledge it; but I am perſuaded, whoever has ſeen them in one and the other Sorts of Soil, will allow, that the Ground I direct for them, is at leaſt one Third more Advantage in the Growth of the Tree than the other.

Sow *Leeks*, *Beets*, *Chervil*, *Spinach*, *Fennel*, *Dill*, *Burnet* and *Sorrel.*

Sow *Endive* very thin, or it will run to Seed.

Divide the Root of *Tarragon*, and tranſplant the Slips about eight Inches apart.

Make young Plantations of *Chives.*

Towards the End, ſow upon the Hot-Beds ſome *Purſlane*, *Naſturtium*, *French* and *African Marygolds.*

Sow *Marygolds* in the natural Ground.

Be diligent this Month in deſtroying Weeds before they run to Seed; for ſhould their Seeds once ſhed in the Garden, it is more than a Summer's Work to get them out.

In the *Hop-Garden* prune all the ſtrong Leaders to two Joints apiece, and take away all the young Shoots cloſe to the Roots, leaving only thoſe which ſhoot from the old Wyars.

## *Products of the* Kitchen-Garden *in MARCH.*

THIS Month affords us very little Variety of Herbs for the Table, for now the Winter Stores are almoſt ſpent, and the Roots, which have been hitherto uſeful, are hard and ſtringy; and beſides, an underſtanding Gardener muſt, at this Seaſon, new crop his Ground with Herbs and Roots for the ſucceeding Months.

The only Herbs now good, are Sprouts of *Cabbages*, young *Cabbage-Plants*, or *Coleworts*, and ſome of the *Winter-Spinach.*

The Roots, are *Carrots*, ſown in *July*, *Radiſhes* of *Michaelmas*, ſome few *Turnips* that were ſown late, and *Red Beets.*

In the Hot-Beds we have *Kidney-Beans* and ſome *Peaſe*, beſides *Cucumbers* upon the Plants raiſed in *January.*

*Aſparagus* upon the Hot-Bed made in *February*, is now much better taſted than what we cut in the preceding Months.

Towards the End, the *Radiſhes* ſown upon the Hot-Bed in *February*, will be fit to draw.

We may now add to the *Sallads* of the foregoing Months ſome *Purſlane*, with young Tops of *Tarragon*, of which a few Leaves will ſerve to give a Reliſh to a large Sallad.

*Hop-Buds*, or *Tops*, are now gathered to boil, and are not much inferior to *Aſparagus*.

Ripe *Cherries* and green *Apricots* may now be had, in great Plenty, at Mr. *Miller*'s beforementioned.

At the End, we have ſome *Scarlet Strawberries* ripe upon the Hot-Beds, and alſo ſome few *Beans*, if we have had Courage enough to forward them by artificial Heats, but that Trouble and Expence rarely turns to Account.

The Stalks and tender Sprouts of *Turnips* running to Seed, are now excellent after the Strings are taken from them; theſe in the Market are called *Lupines*, and are generally eſteemed one of the beſt boiled Sallads.

## *Work to be done in the* Kitchen-Garden *in* *APRIL.*

THE Weather is commonly unſettled in this Month, the Nights frequently froſty, and blighting Winds from the *Eaſt* are yet to be expected. The New Moon of this Month, which the Gardeners call the *Ruddy Moon*, is for the moſt

Part attended with deſtructive and violent Winds, which endanger the tender Sprouts of Plants, and young knit Fruit; therefore Gardeners ought to be careful how they yet expoſe any Houſe Greens or *Exoticks* to the open Air, or depend too much upon the fair Promiſe of a warm Day or two.

If the Weather be dry and windy, ſtake up all new planted Trees, if that Work was neglected in the preceding Month; watering them well once in ten Days; and fence your ſpired ſeedling *Onions* from the Winds, for they are eaſily broken.

In dry Weather, and light Earth, ſet *Kidney-Beans*, about three Inches apart, in Lines, each Line two Foot diſtant from the other, for nearer than that they would not thrive.

Now alſo ſet *Ronceval Peaſe*, and plant *Beans* to ſucceed other Crops; alſo where *Beans* have been ſet too thick, cut down every other Row within three Inches of the Root, and they will produce a good Crop in *Autumn*.

Now is the beſt Time in the whole Year to plant Cuttings or Slips of *Roſemary* and *Lavender*, eſpecially after Rain; and, if omitted in the laſt Month, we may yet plant Slips of *Thyme*, *Sage*, &c.

Sow *Spinach* for the laſt Time in ſome moiſt Place, not too much expoſed to the Sun, for elſe it would ſoon run to Seed.

It is now that our Gardens begin to be over-run with *Snails* and *Slugs*, to the great Deſtruction of our young knit Wall-Fruit, and the Greens of the Kitchen-Garden. Many Ways have been preſcribed to remedy this Evil, as to lay *Tobacco-Duſt*, *Soot*, *Saw-Duſt*, or *Barley Chaff* round about the Stems of *Plants*, which indeed will keep them off for a little Time; but the firſt Rain that falls, gives them full Liberty to paſs over theſe Fortifi-

[illegible]; neither are we more ſucceſsful in putting Tar upon the Stems of Trees, for a few warm Days dry it up: But the moſt ingenious Contrivance to keep off this deſtructive Vermin, that I have ever met with, I learnt from my curious Friend *Carlton Goddard*, Eſq; which is ſo cheap and eaſy, and ſo much to the Purpoſe, that I believe few Lovers of Gardens will be without it.

He directs to wrap about the Stem of a Tree, two or three Rounds of Line, or Rope, made of Horſe-Hair, ſuch as are commonly uſed to hang Cloaths upon; theſe are ſo full of Stubs and ſtragling Points of the Hair, that neither a *Snail* or *Slug* can paſs over them, without wounding themſelves to Death; ſo that the Head of the Tree, if it be a Standard or Dwarf, can receive no Harm from them, if we ſecure the Bottom of the Stems. But to ſecure a Wall-Tree, we muſt yet uſe a little more Caution; for beſides preventing their Paſſage up the Stem of the Tree, we muſt faſten one of theſe Ropes cloſe to the Wall, ſo as to incloſe all the Branches of the Tree, and allow Space enough to nail up the Summer Shoots within the Compaſs of the Hair-Line, as in *Fig.* I. where we may find that the Line is ſo diſpoſed, that as the Tree increaſes in Bigneſs, and ſpreads more and more upon the Wall, the ſame Rope may be altered to ſerve for ſeveral Years.

In *Eſpaliers* of Fruit-Trees, it is only neceſſary to wrap theſe Hair-Lines about the Stems of Trees near the Roots, and about the Bottom of every Stake, which Work ſhould be done in the *Winter*, when the *Snails* are laid up in their cloſe Quarters.

To preſerve *Collyflower Plants*, or other tender Herbs, which are liable to be deſtroyed by *Slugs* or *Snails*, the Hair-Lines may be faſtened about the Edges of the Beds they are planted in. It is to be remarked, that theſe Lines are beſt for this Uſe, when the Hair they are made of is very ſhort, for then they will be full of Points, and compleatly arm'd againſt any Attempts of theſe murdering Vermin.

Sow *Cabbage-Lettuce* to ſucceed thoſe ſown in the former Month.

The Ground is now in good Order to receive the Seeds of *Thyme*, and ſuch like Aromatick Herbs; and this Work ſhould not be delay'd longer than the laſt Week in this Month. *Note*, All ſmall Seeds muſt be ſown ſhallow in the Earth, and the larger Kinds deeper in Proportion; and again, as the Ground is more light and ſandy, every Sort muſt be ſown deeper in heavy Soils.

Sow *Purſlane* upon the natural Ground, and towards the latter End ſow likewiſe ſome Seeds of the *Naſturtium Indicum*, if the *Hot-Beds* are not already provided with young *Plants*. Sow ſmall *Sallads* in open Borders, as *Creſſes*, *Spinach*, *Muſtard*, *Turnip*, or *Rape* and *Radiſh*.

We may continue to make Plantations of *Strawberries*, till the Middle of the Month, placing the *Plants* about eight or ten Inches apart.

If the Weather be moiſt, it is not yet too late to make Layers of *Jeſſamine*, *Honeyſuckle*, *Roſes*, and ſuch like Shrubs.

Sow *Sellery* upon the natural Ground, or upon ſome decay'd *Hot-Bed*, to ſucceed that ſown in *March*.

Sow now *Spaniſh Chardones* in the natural Ground for a ſecond Crop, making Holes for the Seeds about five or ſix Foot diſtance; put four or five Seeds in each Hole, and when they are come up, leave growing only one ſtrong *Plant* in a Hole for blanching.

Towards the End, hough *Carrots*, *Parſnips*, and *Onions*, leaving the two firſt about five or ſix Inches diſtant from one another, and the latter about three or four.

Make Ridges for *Cucumbers* and *Melons* for a full Crop, and prune off the ſuperfluous Branches from the *Melon Plants* upon the forward Ridge: But do this carefully, without lifting up the Runners from the Ground; for the leaſt Diſturbance of that Kind is apt to bruiſe the tender Branches, which often ends in the Loſs of the whole *Plant*.

Near the Beginning ſet up the Poles in the *Hop-Garden*, placing three or four in each Hole, as the Strength of the *Plants* require. At the ſame time lead the Wyars, or Runners of the *Hop-Vines* to the Poles; and, if need require, tie them up with Baſs. 'Tis now all Weeds ſhould be deſtroy'd before they run to Seed, to prevent an endleſs Trouble which they would create, if their Seeds were once ſuffer'd to ſhed.

If we have given timely Aſſiſtance with artificial Heats to thoſe *Vines* planted againſt the forward Frames, we may now expect their Fruit to ſet; and it is then a proper Time to pinch off the Buds of the bearing Branches two or three Buds above the Fruit; for we muſt conſider, thoſe Plants which are forwarded by Artifice, do not depend upon the ſame Seaſons as thoſe do which are under the common Law of Nature.

Water well your *Strawberries* while they are in Bloſſom, two or three Times a Week, if the Weather be dry; this muſt be done in the Morning.

*Pro-*

## *Products of the Month of APRIL.*

FOR boiled *Sallads*, we have young *Carrots* ſown in the foregoing *Autumn*, as alſo *Winter Spinach:* We have yet ſome *Sprouts* from the old Stems of *Cabbages* and *Colewarts*; or young *Cabbage-Plants*, or *Radiſh Tops*, in this Scarcity of boiling-Greens, are uſed by many, and are not to be deſpiſed: But, what is preferable to all, there is *Aſparagus* now in great Plenty upon the natural Beds, making its firſt Appearance in the Gardens near *London*, about the third or fourth of this Month, and in thoſe Parts of *Devonſhire* lying near the Sea, above a Fortnight ſooner; which I mention here, that we may the better judge, how much a Degree's Difference *South* or *North* between one Place and another, will forward or keep back the Growth of a *Plant* We have now ſome *Sprouts* or *Collyflowers*, which begin to run to Seed, as they often will do, if the *Winter* has been mild; They eat very well.

Young *Radiſhes* are now very plentiful, and ſome of the *Dutch Brown Lettuce*, which has ſtood the *Winter*, will cabbage towards the End.

The ſmall Herbs for *Sallads* upon the natural Ground, are *Creſſes*, *Radiſh*, *Turnip*, *Spinach*, and *Muſtard*; and the other Herbs proper to mix with them, are *Burnet*, *Taragon*, and young *Onions*. Upon the *Hot-Beds* we have now alſo ſome young *Purſlane*.

About the End, the *Kidney-Beans* which were ſown in the Middle of *February* upon a *Hot-Bed*, will be fit to gather.

We have Plenty of *Cucumbers* upon the *Hot-Beds* made for that Purpoſe, about the Beginning of *February*, and *Muſhrooms* upon the Beds made about the ſame time.

We have now *Scallions* and *Leeks*, and ſweet Herbs growing of all Sorts, except that which is call'd the *Summer Sweet Marjoram*.

Ripe *Cherries*, and large green *Apricots* are now in Plenty at Mr. *Millet's* aforeſaid, and ripe *Strawberries* upon thoſe *Plants* which have been aſſiſted with a *Hot-Bed*.

We have *Green Gooſeberries* for *Tarts*.

## *Works to be done in the Kitchen-Garden in* MAY.

ALTHOUGH in this Month the Seaſon is ſo far advanced, as to bring many Plants to their higheſt Perfection, and Nature ſeems to be dreſt in her Wedding-Garment, the Garden is yet ſubject to many Hazards from froſty Nights and cold Blaſts, which oftentimes happen in the firſt fifteen Days. It is not many Years ſince a great Snow fell in the firſt Week of this Month; and though Snows are uncommon at this Seaſon, yet the Showers which frequently fall towards the Beginning, are often mixed with Hail, which I account the moſt pernicious Off-ſpring of the Weather, with reſpect to Vegetables; for their Leaves and young Fruit are then tender, and very ſubject to bruiſe by every little Accident of that Kind. It has been a Rule among the Gardeners about the Middle of this Month to expoſe or bring Abroad their exotick Plants, and ſuch tender Shrubs as the Uncertainty of the Weather in the preceding Months confined within Doors; and I have obſerved, we ſeldom have any Weather ſo unfavourable to Plants after the fifteenth, as to do them any Prejudice.

If ill Weather, or other Accidents, has prevented a Gardener from performing what I have recommended for the Works of the laſt Month, let him delay them no longer than the firſt Week in this; for now the Seaſon is ſo far advanced, that a Day loſt is equal to a Week in *January*, *February*, or *March*.

Now look to your *Melon* Ridges, as well thoſe made in *February*, as thoſe which were planted in the laſt Month, weeding them, and carefully pruning off the Water Branches, which are known by their Flatneſs, and extraordinary Breadth: It is alſo adviſable to pinch off the Tops of ſuch Runners as have Fruit upon them, leaving three, or four Joynts always beyond the Fruit, and particularly taking Care, that every Fruit be ſufficiently ſhelter'd with Leaves; for to expoſe them to the Sun, while they are ſmall, ſpoils their Growth. *N. B.* A *Melon* is about forty Days between the Time of its ſetting, and ripening; and as I preſcribe that Fruit to be ſhaded by the Leaves, during the Time of its Growth; ſo, when that is perfected, we cannot expoſe it too much to the Sun for ripening, if we would have it well taſted.

If the Seaſon be dry, rather float the Alleys between the *Melon* Ridges, than pour Water upon the Plants, or near the Stems; for the Uſe of Watering is to feed the extream Fibres of the Roots, which are the only Parts of a Plant by which it receives its Nouriſhment; and theſe Fibres in *Melon*, and *Cucumber* Plants always run as far as the Branches: The Inconveniencies which attend the wetting the Leaves or Stems of theſe Plants, are either, that they rot or mould by the Wet lying upon them, or elſe they are ſcalded if the Sun ſhine hot.

The Water for this Uſe ſhould be as ſimple as poſſible; for all Waters prepared with hot Dungs, breed Inſects among the Plants, which often deſtroy them. Pond-Water, which lyes expoſed to the Sun, I take to be the beſt, and even that ought to be given but in ſmall Quantities to a *Melon*, for much Wet ſpoils its Flavour; but *Cucumbers* are great Lovers of it.

The Beginning of this Month ſow *Cucumbers* in the natural Ground, about twelve Seeds in each Hole, for fear of Diſappointments, but leave only four or five when they are come up. Let the Earth be freſh and well work'd with a Spade, rather light than otherwiſe, for in ſtiff Soil the Fruit is to ſuffer by Worms. This Sowing will afford us Plenty of Fruit in *July*, as well for Pickling, as to eat with *Sallads*; a Plantation of this Kind producing near twice as much Fruit as one of the ſame Quantity of Ground forced with Dungs.

Sow ſome of the *Dutch Brown Lettuce* to be planted out the next Month for Cabbaging. We may alſo replant *Imperial* and *Sileſia Lettuce*, if we have any large enough for that Purpoſe. If any of the *Imperial Lettuces* are cabbaged, cut the Tops of them croſs-wiſe, that the Flower-Stems may have Liberty to ſhoot, in order for ſeedling. Sow yet ſome *Radiſhes*.

Tranſplant *Collyflower Plants*, and make your firſt Drills for *Sellery*, if your *Plants* are large enough.

Sow *Ronceval Peaſe*, and towards the End, earth up and ſtake thoſe which are ſown in the former Month.

We may now ſow ſome *Endive* very thin, to be blanched without tranſplanting.

Sow *Purſlane* upon the natural Ground, and *Cabbages.*

Gather carefully the Neſts of *Caterpillars* and other Inſects which annoy your Trees, and prune off all crumpled Leaves and Twigs: for they harbour the worſt of Vermin, although they are ſcarce viſible without the Help of *Microſcopes:* This Work is the more neceſſary, becauſe every Inſect increaſes yearly about 400, and ſome of them many more; for Example, thoſe *Caterpillars* which feed upon the *Cabbage*, and change into the common white Butterflies, breed twice every Year, each of them laying near 400 Eggs at one Time; ſo that from the ſecond Brood of one ſingle *Caterpillar*, we may reaſonable expect 160,000.

Continue to deſtroy Weeds before they ſhed their Seeds, and particularly thoſe Kinds which have feather'd Seeds, ſuch as *Dandelion*, which are carried by Winds to every Quarter of the Garden, and are hardly to be rooted out when once they get Poſſeſſion.

## *Products of the Kitchen-Garden in MAY.*

THE Kitchen-Garden now affords us many pleaſing Varieties both of Fruits and Herbs.

*Aſparagus* is now in great Plenty, and *Colly-flowers* are now in their greateſt Perfection.

The *Imperial*, *Royal*, *Sileſia*, and many other Kinds of *Cabbage-Lettuces*, are in their Prime, Now look to your *Eſpaliers* of Fruit-Trees, and lay in good Store of Branches, as well to ſupply Vacancies, as for Fruit-bearing.

## *Products of the Kitchen-Garden in JUNE.*

AT the Beginning we have ſome *Aſparagus*, but I cannot adviſe cutting them after the firſt Week.

We have great Plenty of *Garden-Beans*, *Peaſe*, and *Kidney-Beans*: *Collyflowers* are now in great Perfection; and ſome of the *Batterſea* and *Dutch Cabbages*, will be fit to cut towards the Beginning of the Month. We have alſo great Plenty of *Artichoaks*.

We begin to draw ſome young *Carrots* and *Onions* that were ſown in *February*, and ſome young *Parſnips*.

*Sallads* for this Month are compoſed of *Purſlane*, *Burnet*, the Flowers of *Naſturtium Indicum*, and *Cabbage-Lettuces* of ſeveral Kinds, *viz.* the *Dutch Brown*, the *Imperial*, *Royal Sileſia*, and *Coſs Lettuces*, with ſome blanch'd *Endive* and *Cucumbers*.

The Flower Stems of *Burrage* and *Burnet* are now good in cool Tankards.

The Pot-Herbs in Uſe in the preceding Month are ſtill good.

We have green *Gooſeberries* for Tarts till about the End of this Month.

The ripe Fruits are *Strawberries*, *Cherries*, of many Kinds, as the *Duke*, *White*, *Black*, and *Red Hearts*, the *Flemiſh* and *Carnation Cherries*, ſome *Raſberries*, *Currants*, and *Melons* of the firſt Ridges. Alſo we have *Codlins* now fit for Uſe, and towards the End ſome *Juniting*s and the *Maſculine Apricots*, and in the forcing Frames (if we have any) all the forward Kinds of Grapes are ripe.

## *Works to be done in the* Kitchen-Garden *in* *JULY.*

WE are now arrived at that happy Seaſon, which affords us almoſt every Variety the *Kitchen-Garden* can produce. If the Gardener has been diligent in the preceding Months, he now meets the Reward due to his Skill and Labour. We have little Rain at this Time, and the Weather very hot; therefore our greateſt Care muſt be to water carefully all new planted Trees and Herbs, ſo as to nouriſh their outward Fibres, as I have before directed. The Hours of general Watering in this Month are from five in the Morning until eight; and from five in the Afternoon 'till eight or nine in the Evening; but in particular Places, which have the Benefit of ſome Wall or Hedge to ſhade the Sun from them, we may take other Times of the Day, obſerving the Motion of the Sun, that his Beams do not reach them 'till at leaſt two Hours after watering; for the extream Heat of the Sun at this Time of the Year would ſcald a new-water'd *Plant*, if we do not allow a ſufficient Time for the Moiſture to ſink into the Ground, before the Sun come upon it.

Truſt not too much to the ſudden Showers which may now fall, for they are of little Help to the Roots of *Plants*; neither neglect to water thoſe *Plants* which ſtand Abroad in Pots or Caſes, for they have yet leſs Benefit from the

Rains in this Seaſon, than the *Plants* in the open Ground.

The firſt Week ſow *Kidney Beans*, and ſome *Peaſe* to bear in *September* and *October*, where they may have ſome Shelter from the froſty Nights in thoſe Months. And have an Eye to ſuch Herbs as are now ſeedling: Water them plentifully, for about this Time the Seed-Veſſels of many are forming, and a good Watering or two is very helpful to the filling of the Seed.

Delay not to gather ſuch Seeds as are fully grown and coloured in their Huſks, pulling up the whole *Plants*, and ſetting them upright in a Green-Houſe 'till the Seed-Pods are dry; for were we to wait 'till the Huſks open, before we gather them, great Part of the Seed would be loſt. This Way of gathering Seed is commonly practiſed; the Moiſture in the *Plants*, and a little Sun, will perfect the Seeds, and they are ſubject to no Hazards from Birds or Wet.

The firſt Week ſow *Cucumbers* upon a Bed made with dry Horſe-Litter, covered with light Earth ten Inches thick; theſe will begin to bloſſom in *September*, and muſt then be covered at Night with a common Frame and Glaſs, to keep them from Froſts, and cold Rain. By this Method you may have *Cucumbers* 'till *Chriſtmas*.

Sow *Royal*, *Sileſia*, and *Brown Dutch-Lettuces* about the Middle of the Month, ſome of which will be cabbaged for *Winter* Uſe, and may then be planted cloſe together where they may be ſheltered with Glaſſes, and have the Benefit of the Sun; but we muſt note, that they ſhould be ſecured before any Froſt can pinch them, or they will rot.

The ſecond Week in this Month, ſow *Carrots*, *Turnips* and *Onions* to ſtand the *Winter*.

Earth up *Sellery* in Drills, and plant out a new Parcel to ſucceed the former.

Plant out *Collyflowers* to bloſſom in *September*.

Plant *Cabbages* and *Savoys* for *Autumn*, and *Winter* Uſe.

Guard againſt Waſps and other Inſects, which now devour your Fruit, by placing Phyals of Honey and Ale near Fruit-Trees; this Way you may ſoon catch a large Quantity of them. Once every Week renew the Bottles, and above all, take Care to bruiſe the Inſects you take out of them; for though they are ſeemingly dead, I have known a warm Day or two bring them to themſelves; therefore take Care how you throw them heedleſly away.

There is no Time more proper to war againſt *Ants*, and other deſtructive Vermin, than this Month; they are now all abroad, and may be taken. [See Mr. *Laurence*'s Invention for deſtroying of Ants and Earth-worms, in his Fruit-Garden Kalendar, *P.* 74.]

Be careful to pick off all crumpled Leaves, wherever you ſee them, and the very Twigs themſelves, if they are curled, for they are the Beds of deſtructive Creatures.

I the more particularly recommend the Deſtruction of theſe devouring Vermin, becauſe of their wonderful Increaſe, eſpecially the ſmaller Kinds of them, ſuch as infect the *Collyflower*, whoſe Eggs are five hundred Times leſs than the leaſt viſible Grain of Sand, and many thouſands of them in Number, lay'd (as I believe) from one ſingle Inſect, ſo that from a ſecond Generation of them, they are ſo numerous, that if every Egg which one might find upon a blighted *Collyflower*, was a Globe of an Inch Diameter, they would fill more Space than the whole Terreſtrial Globe. The wonderful Smallneſs of the Eggs of thoſe Creatures, I confeſs, may ſeem very ſtrange to thoſe who are unacquainted with the Uſe of Microſcopes; but this is no more curious than what the late famous Dr. *Hook* has taught us in his Works, where he mentions the Seeds of Moſs, which were ſo ſmall, that *Ninety Thouſand* of them being laid together in a ſtrait Line, did not exceed the Length of a Barley-Corn, and that 1,382,400,000 of them would weigh only a Grain. But ſee more of theſe Minute-Beings in Dr. *Hook*'s *Micrographia*, Mr. *Lowenhoeck*'s Works in the *Philoſophical Tranſactions*, and the Chapter of *Blights*, in my *New Improvements*, Part III.

Hough and weed, as in the former Month.

About the twentieth, ſow ſome *Collyflowers* to ſtand the *Winter*; for the right Seaſon for this Work is chiefly to be regarded, if we propoſe to have good Flowers early in the *Spring*; for ſowing them only a few Days ſooner or later, makes them either run before their Time, or come much later and weaker than they ought to do. If the *Winter* be mild, and the *Plants* are ſet cloſe together, many will run up to Seed; and if ſharp Froſts, and a rough Seaſon begins in *November*, ſome of this Sowing (with the uſual Helps) will make good forward *Plants*: However, ſince the Price of a little Seed can be no great Matter to a curious Man, I adviſe to ſow again the firſt Week in the next Month, as I ſhall more particularly direct; ſo that from theſe two Seminaries it will be impoſſible to miſs of a Crop to our Mind; for if the firſt run, they will not be quite unfit for Uſe, and thoſe ſown in *Auguſt* will then certainly produce good Flowers in the *Spring*.

We ſow *Chervil* for *Winter*.

We take up this Month *Shallots*, *Garlick*, and gather *Rocambole* when the Stalk turns Yellow.

When the Stalks of *Onions* change their Colour, pull them up in dry Weather, and expoſe them to the Sun, 'till they are well dry'd, to lay up for the *Winter*; but take care the Rain does not come at them after they are out of the Ground.

Tranſplant *Endive*, for blanching againſt *Winter*.

*Chadrones* ſhould now be tied up with Hay or Straw-Bands for blanching.

Make a Bed for *Muſhrooms*, and be ſure to cover it very thin with Earth, hardly two Inches thick; for on that depends your Succeſs.

Weed your young Nurſeries of *Foreſt-Trees*.

## *Products of the Kitchen-Garden in* JULY.

WE have *Ronceval-Peaſe*, *Garden-Beans*, *and Kidney-Beans*; and ſome commend the *Wing'd-Peaſe* to be gather'd very young, and dreſs'd as *Kidney-Beans*.

We have *Collyflowers*, *Cabbages*, and *Articbokes*, in Abundance, and ſome of the ſmall *Articboke-Suckers*, to be eaten raw or fryed.

All Sorts of Herbs for the Kitchen are very good, if the Gardener has minded, from Time to Time, to cut them down for ſhooting afreſh: Aromatick Herbs, eſpecially, are in their greateſt Perfection.

Sallads for this Month are compoſed of *Cabbage-Lettuce*, *Purſlane*, *Tarragon*, *Burnet*, young *Onions*, *Cucumbers*, Flowers of the *Naſturtium Indicum*, and ſome *Endive* blanch'd.

We have young *Carrots*, *Turnips*, and *Beets*.

We have great Plenty of *Musk-Melons*, *Currants*, *Gooſeberries*, *Raſberries*, *Cherries*, *Plumbs*, *Apricots*, *Peaches*, and *Nectarines*, and the *July* and *Sweet-Water Grapes*, at Mr. *Whitmill*'s at *Hoxton*.

The *Jenniting*, and *Codling* are now good, and ſome *Pears*. We yet have ſome *Wood-Strawberries*; and towards the End, our firſt *Figs* are ripe, and ſome of the *July Grapes*.

This is the beſt Month for pickling *Cucumbers*.

## *Works to be done in the Kitchen-Garden in* AUGUST.

THE firſt Part of this Month the Weather is commonly hot and dry, ſo that watering is ſtill neceſſary; but about the latter End, we are not without Danger of froſty Nights, and I have obſerved, that then alſo our firſt Rains begin.

We may water in the Evenings, 'till the fifteenth; and after that, if there is Occaſion, the Morning is to be preferr'd for that Work, for fear of Froſt.

The firſt Week ſow a ſecond Crop of *Colly-flowers* to ſtand the *Winter*, leſt the firſt ſhould run to Seed, which they will be apt to do, if we have an open Seaſon 'till *Chriſtmas*, or the Ground be light, and lye in a Bottom; eſpecially near the Sea, 'tis good to provide againſt ſuch Accidents.

Sow *Radiſhes*, *Cabbages*, *Coleworts*, and *Onions* to ſtand the *Winter*.

Sow *Lettuce*, *Chervil*, *Corn-ſallet*, and *Spinach* for *Winter* Uſe.

Now break off the Stems of ſuch *Artichokes* as have done blowing.

Sow *Creſſes* to ſtand the *Winter*; they will heighten the Taſte of thoſe *Sallads* which are gathered upon the Hot-Beds in *December*, *January*, &c.

Tranſplant *Cabbage-Lettuces* to ſtand the *Winter*; eſpecially of the *Dutch Brown* Sort.

Tye up *Endive* for blanching.

Give more Earth to your blanching *Sellery*, and continue to raiſe the Earth about it every Fortnight, 'till it is fit for Uſe.

Gather Seeds as directed in the former Month.

Yet continue to deſtroy Weeds, and ſuch Vermin as annoy your Trees.

Towards the End, ſlip and ſet Aromatick Herbs, as *Savory*, *Thyme*, *Hyſſop*, *&c.* and cut down thoſe which are run to Seed within three or four Inches of the Ground.

'Till the tenth of this Month, we may ſow *Turnips* in the open Field, eſpecially about *London*, for theſe Roots not only yield a profitable Crop, but very much enrich all light Soils. In thoſe Parts near the Sea in *Devonſhire*, the twentieth of this Month will not be too late to ſow them; for that Country is ſo fortunately ſituated, that it will perfect a *Plant* above fifteen Days ſooner than any Part about *London*; and from the beſt Obſervations I can make, I find that about *Northampton* all Plants come near a Fortnight later than in our *London* Gardens; ſo that *Turnips* ſhould be ſown in thoſe Parts very early in *Auguſt*; or rather the End of *July*.

## *Products of the Kitchen-Garden in AUGUST.*

FOR boiling, we have *Cabbages*, and the *Sprouts* of the firſt *Cabbages*, *Collyflowers*, *Artichokes*, *Cabbage-Lettuce*, *Beets*, *Carrots*, *Potatoes*, and *Turnips*; but other boiling Roots ſhould not yet be touched.

We have yet ſome *Beans*, *Peaſe*, and *Kidney-Beans*.

All Sorts of Kitchen-Herbs are now as in the laſt Month.

We have *Radiſhes* and *Horſes-Radiſhes*.

The *Sallads* are *Cabbage-Lettuce*, *Cucumbers*, with a Mixture of young *Creſſes*, *Muſtard*, *Radiſh*, and a little *Tarragon*.

Roots now dry in the Houſe are *Onions*, *Garlick*, *Shallots*, *Rocambole*.

We have Plenty of *Cucumbers* for pickling, and this Work ſhould not be now any longer delaying, for the firſt Froſt or great Rains ſpoil them.

We have *Musk-Melons* in Abundance.

Towards the End, we begin to cut ſome *Sellery*.

We have ſtill ſome *Gooſeberries*, *Raſberries*, and *Currants*, with ſome of the *Carnation* and *Morella Cherries*, *Apricots*, *Plumbs* of various Kinds, ſeveral Sorts of *Peaches* and *Nectarines*, *Pears* and *Apples*, ſeveral Kinds of *Figs*, *Mulberries*, and *Filberts*.

And of *Grapes* the *July*, Mr. *Whitmill's Sweet-water*, and his ſmall *Blue Raiſin*, which is the *Morignon*, an excellent *Grape* for a *Vineyard*, and the *Burgundy Grape*.

*Works*

## *Works to be done in the Kitchen-Garden in SEPTEMBER.*

IN this Month the Gardener has great Variety of Buſineſs, and muſt employ his Head as well as his Hands, towards furniſhing his *Kitchen-Garden* with every Thing neceſſary for *Winter* Uſe. The Showers, which are ſeldom wanting at this Seaſon, prepare the Ground for the Reception of many Plants and Seeds; and the great Heats alſo declining, give us now Opportunity of replanting many Things, which would have been endanger'd by removing in the preceding Months.

At the Beginning, hough *Turnips*, the firſt Time.

If the Weather be dry, gather ſuch Fruits as are now ripe upon the Trees, and ſuch others as are full grown, and in good Condition to be laid up in the Houſe for the Uſe of the two following Months.

*Note*, Such *Pears* or *Apples*, as are fit to gather, will eaſily leave the Tree; therefore uſe no Violence to pull them off, for ſuch as do not willingly part from the Tree, will ſhrivel, and have an inſipid Taſte.

Gather ſuch ſmall Seeds as are now ripe, according to the former Directions.

Gather your *Leek* Seed, if the Seeds are black, cutting the Heads from the Stems, and ſpread them upon a Sheet every Day in the Sun, 'till they are fit to be thraſh'd out.

Gather the Pods of *Garden* and *Kidney-Beans*, and expoſe them to the Sun for drying, to be laid up 'till Spring, or the Time you would uſe them, and let them not be taken out of the Seed-Pods, 'till your Grounds is ready for them, for the Pods preſerve the Seed. In the like Manner ſave your choice Sorts of *Peaſe*.

The *Cucumbers* which are now full ripe muſt be cut open, and the Seeds and Pulp taken out of them, to remain together two or three Days before they are waſh'd clean: The Seed may then be kept in Water about twenty-four Hours, and laid to dry in the Sun for ten Days. Be ſure all Seeds are thoroughly dry before they are laid up, or they will rot.

Cover now every Night your *Cucumbers* ſown in *July*.

Sow ſome of the *Spaniſh Radiſh* for the *Winter*.

Make Beds for *Muſhrooms* as before directed.

We may yet replant *Endive*, and all Sorts of Fibrous-rooted Herbs.

Continue to earth up *Sellery*, and now raiſe Banks of Earth about your *Chardones* for blanching.

Sow *Spinach* to be cut in *February*.

Yet ſow *Sorrel*, and *Chervil*.

Make Plantations of *Cabbages* and *Coleworts*.

'Tis now a good Seaſon to tranſplant *Strawberries*.

Now make Plantations of the *Dutch Brown Lettuce*, to ſtand the *Winter*.

Tranſplant young *Collyflower Plants* in Places where they are to flower, and in Nurſeries under ſome warm Wall or Place of Shelter. *Note*, Thoſe which are now planted out for Good, will bloſſom above fifteen Days ſooner than thoſe which are planted in the *Spring*, and will produce much larger Flowers, if they are well defended ſrom Froſts with Glaſs Bells.

If the Seaſon be dry, water in the Morning.

The laſt Week, if Showers fall, is a very ſafe Time to plant Fruit-Trees, although their Leaves are not fallen; ſuch as *Peaches*, *Nectarines*, *Cherries*, and other *Stone-Fruit*; but *Apples*, *Pears*, &c. may be delay'd 'till the Middle of the next Month.

We may now tranſplant *Aſparagus Roots.*

Sow ſmall Herbs for *Sallads* in ſome well expoſed Place, obſerving to provide ſuch Mixtures for this Seaſon, as are hotter to the Taſte, than what are raiſed in the former Months; for the Evenings (the beſt Time to eat *Sallads*) are now cold.

Sow ſome Seeds of the *Naſturtium Indicum* in Pots to ſtand the *Winter*, which they will do very well, if they are ſhelter'd in a common Greenhouſe.

## *Products of the Kitchen Garden in* *SEPTEMBER.*

WE have now ſeveral Kinds of *Peaches*, *Grapes*, *Figs*, *Pears*, and *Apples*, with ſome of the late Kinds of *Plumbs.*

We have yet *Melons* and *Cucumbers.*

*Walnuts* are now good, and *Filberts* full ripe.

This Month affords us ſome young *Garden-Beans*, and *Ronceval-Peaſe*, and we have yet ſome *Kidney-Beans.*

Upon the *Artichokes* which were planted at *Spring*, we have now very good Flowers and Suckers, and we have ſtill Plenty of *Collyflowers.*

We have Cabbage-Lettuce of several Sorts in great Perfection, and *Radishes*.

*Sallads* for this Month are composed of *Cresses*, Radish, Chervil, young Onions, Tarragon, Burnet, and Lettuce, with some blanch'd Sellery and *Endive*.

We have Plenty of *Mushrooms* upon Beds and in Pasture-Grounds.

We have Carrots, some Turnips, *Skirrets*, Parsneps, and *Beets*, both the *Red* and the *White*.

Roots for the Kitchen Use, are *Horse-Radish*, Onions, Garlick, *Shalots*, and *Rocambole*.

We have Abundance of Cabbages, and Sprouts of Cabbages, with some *Savoys*; but the last eat much better when the Frost has pinch'd them.

## *[illegible] Flower-Garden in* OCTOBER.

We ought now to make Use of every Opportunity to [illegible] the Plantations [illegible] Use. The [illegible] this Month we may [illegible] Weather, but after [illegible] Business will be to secure from the Severities of the Season, the Plants which are in Danger of being injured by the Frosts and high Winds.

'Tis the first Week in this Month, that I advise the sowing of [illegible] on the natural Ground, to be afterwards transplanted into Pots, where they may be shelter'd from the Cold of the Nights, till a gentle *Hot-Bed* is neceſſary for them. This Way of raiſing *Cucumbers*, to have them come forward, is certainly much better than to begin after the uſual Method in *December* or *January*; for theſe *Plants* will better endure the cold Air than thoſe which are raiſed when the Ground is cover'd with Snow.

Now ſet ſome *Kidney-Beans* in Baſkets under ſome warm Wall, to be afterwards aſſiſted by moderate *Hot-Beds* as the Seaſon becomes violent: With good Management theſe will fruit very early.

Take up thoſe *Collyflower* Plants which begin to flower, tye their Leaves together, and bury their Roots and Stalks in Sand in a Cellar, or ſome cool Place; the Flowers will increaſe in Bigneſs, and remain good two or three Months.

Alſo cut *Artichokes* with long Stalks, and preſerve them in the Houſe, ſetting their Stalks in Sand.

'Tis now the Seaſon to lay up Roots for *Winter* Store, ſuch as *Carrots*, and *Parſnips*; and ſome Gardeners alſo think it beſt to take the Roots of *Turnips* out of the Ground, and lay them in Sand: But I rather chuſe to leave the *Turnips* in the Ground, till we are ready to uſe them; and for the other two Kinds, I preſcribe the following Method: Make choice of a dry Part in your Garden, and there dig a Trench about ſix or eight Inches deep, into which (without Mixture of Earth or Sand) lay your Roots cloſe together, firſt cutting off their green Tops and growing Buds, and then cover them about ſix Inches thick with Wheat-Straw, ridge-wiſe. We may this Way preſerve them fit for Uſe, till the following *June*.

'Tis now the beſt Time of the Year for tranſplanting of Fruit-Trees, although their Leaves are upon them.

Tranſplant *Foreſt-Trees* of all Sorts, from the Beginning to the End of the Month; the *Elm* eſpecially about the firſt Week, although its Leaves are then very green. I have ſeen the Experience of this at *Mamhead* in *Devonſhire*, the Seat of *Thomas Balle*, Eſq; a very curious and learned Gentleman.

About the Middle of the Month ſow the *Cyder-Preſſings* in Beds of freſh Earth, to raiſe Stocks for grafting, or even making of *Orchards* without grafting. From a Nurſery of this Kind we raiſe as many different Sorts of *Apples* as we raiſe *Plants*, although the Seeds came all from the ſame Tree; ſo much is Nature pleas'd with Variety: And it may be, was the Earth more conſtant and uniform in its Productions, its Vegetative Power would be too ſoon exhauſted, for I conceive, were all *Apples* exactly the ſame, they would all draw the very ſame Nouriſhment from the Earth; and the like with every other Tribe of Vegetables. But this Variety ſeems to determine what I have often thought of, that there are as many diſtinct Qualities in the Earth, as there are different Kinds of *Plants* growing upon it, and that each *Plant* can only take out of the Earth that Spirit which its Parts are naturally prepared to receive, and leave the others undiſturbed. If the Generation of *Plants* is allowed, as I have endeavoured to explain it in the Firſt Part of my *New Improvements*, the vaſt Varieties in *Plants*, ſeem to proceed from the coupling of one *Plant* with another; that is, the *Farina Fœcundans* of one Sort, being conveyed by the Air, and lodg'd upon the Female Parts in the Bloſſoms of another Tree, changes the Properties in the Seed, which it impregnates, ſo as to make it produce a Tree, differing, in ſome Reſpects, from the *Mother-Plant.*

Now lay up ſome *Acorns* and the *Maſt* of other Timber-Trees in dry Sand.

We may yet tranſplant *Cabbage* and *Collyflower* Plants; and now make your laſt Plantation of *Lettuces* to ſtand the *Winter.*

The *Cucumbers* which I directed to be ſown in *July*, muſt now be carefully covered up every Night, and the Glaſſes be kept over them in wet or windy Weather; but give them Air in the Day-time, if the Seaſon will permit.

Continue to Earth up *Sellery* for blanching.

Towards the End, earth up and dreſs ſuch *Artichokes* as have done blowing.

Sow *Creſſes*, *Lettuce*, *Muſtard*, *Radiſh*, *Turnip*, and *Spinach* upon a decay'd *Hot-Bed*, to be cut for *Sallads.*

If you have not yet made a Plantation of *Lettuces* (already cabbaged) for *Winter* Uſe, delay no longer to do it in ſome well-expoſed Place, where they may be defended from the Froſt.

Now gather ſuch *Pears* and *Apples* as are full ripe, in a dry Day, without bruiſing them, and lay them in the Fruitery upon dry *Moſs.*

Sow *Radiſhes* in ſome warm Place to draw early in the *Spring.*

Sow ſome of the *Hotſpur-Peaſe* and *Spaniſh Beans* in ſome well expoſed Border, rather under a thick Hedge, than under a Wall.

Make Plantations of *Gooſeberries*, *Currants*, and *Raſberries* from the *Suckers* or Cuttings.

Now make Plantations of *Apples* (grafted upon *Paradiſe* Stocks) in Pots; they will bear when the Trees are very ſmall, and are very Ornamental at an Entertainment, to be ſet growing upon a Table.

Now put ſome Roots of *Minth* upon a gentle *Hot-Bed.*

### *Products of the Kitchen-Garden in* OCTOBER.

IN this Month we hav yet remaining ſome *Callyflowers*, *Artichokes*, *Peaſe* and *Beans.*

The *Kidney-Beans* ſown ı *July*, will now produce good Fruit, if we efend them from the cold Nights.

We have yet *Cucumbers* and ſome *Melons.*

Roots for boiling are, *urnips*, *Carrots*, *Parſnips*, *Potatoes*, *Skirrets*, *Scorzonera*, and *Beets.*

Roots to uſe raw in the Kitchen are, *Onions*, *Garlick*, *Shallots*, *Rocambole.*

Sallad Herbs are, *Creſſes*, *Chervil*, *Muſtard*, *Radiſh*, *Turnip*, or *Rape*, *Spinach*, *Lettuce*, both ſmall, and ſeveral Sorts of *Cabbage-Lettuce*, *Burnet*, *Tarragon*, and young *Onions*, with blanch'd *Sellery* and *Endive.*

We have *Chardones.*

Herbs for Soup and other Kitchen Uſes, are *Parſley*, *Beets*, and all the Aromatick Herbs.

Ripe Fruits in this Month, are ſome of the late *Peaches* and *Plumbs*, *Grapes*, *Figs*, and *Mulberries*, with ſome *Filberts* and *Walnuts*, and great Variety of *Pears* and *Apples.*

We have Plenty of *Muſhrooms.*

## *Works to be done in the Kitchen-Garden in NOVEMBER.*

THIS Month is ſubject to violent Winds, froſty Nights, and great Rains, taking their Courſe by Turns to the great Hurt of our Gardens and Plantations. It is not enough to guard againſt the pinching Froſts, or ſhelter many tender Plants from the cold Rains which fall at this Seaſon, but we muſt alſo be diligent to ſecure our Fruit-Trees and ſuch Foreſt-Trees as have been lately planted, with ſtrong Stakes, leſt they are blown down or ſhaken by the boiſtrous Winds now coming from the Weſt; for nothing, in my Opinion, contributes to deſtroy the Welfare of a young Tree more, than to leave it unguarded and expos'd to the Mercy of the Winds; the young Fibres lately form'd, are broken, and every Part through which the Sap ſhould have its Paſſage to the Head, is bruiſed and wounded; ſo that for want of a free Paſſage for the Sap, the Top is not half ſupply'd, and the whole languiſhes.

Now trench Ground, and lay it up in Ridges to mellow.

Set *Beans* of the *Spaniſh* Kind, and ſome of the *Hotſpur-Peaſe*, in ſome well-expoſed Place.

Prepare now a gentle *Hot-Bed* for the *Cucumbers* ſown in *October*, and for the *Kidney-Beans* ſown at the ſame Time; but plant them not together; for the Warmth which is neceſſary to keep a *Cucumber*, would deſtroy the *Beans*.

Now make *Hot-Beds* for *Aſparagus*, to have ſome in *December*; and if we are not provided with Roots in our own Nurſery, we may take them from ſome old Plantation which is worn out. Set the Roots cloſe together, without trimming, taking Care that they do not come within two Inches of the Dung, and that their Buds are covered at leaſt four Inches thick with Earth. [See further Directions in my *New Improvements*, Part III.]

'Tis now a very good Time to lay down Branches of the Vine, eſpecially ſuch as we would have Fruit upon the following Year, to be ſet growing in Pots upon a Table at great Entertainments. The Branches for this Purpoſe muſt be Shoots of the ſame Year, and ſo drawn thro' the Hole at the Bottom of a Garden Pot, that when it is filled with Earth, there may be a reaſonable Number of Eyes or Buds above Ground:

Sow *Lettuce*, *Creſſes*, *Muſtard*, *Radiſh*, *Turnip* and *Spinach*, upon *Hot-Beds* for young Sallads.

Earth up *Sellery*, and tye up *Endive* Plants for blanching.

Now is the beſt Time to cut off the *Aſparagus* Haulm; when it is turn'd yellow, cut it within two or three Inches of the Ground, and fling up ſome Earth out of the Alleys upon the Beds; or if your *Aſparagus* has been worn, give it a Covering of rich Soil.

Continue ſtill to trench Ground, and in froſty Weather wheel Dung and other Manures upon ſuch Places as want to be enrich'd, for then the Walks will not be ſpoiled.

Sow *Peaſe* and *Beans* of the *Hotſpur* or *Spaniſh* Kinds in open Ground; and if the Weather be fair, Earth up thoſe ſown in *September.*

## *Products of the Kitchen-Garden in NOVEMBER.*

THIS Month we have *Collyflowers* in the Green-Houſe, and ſome *Artichokes.*

Roots to be uſed this Month are *Carrots*, *Parſnips*, *Turnips*, *Beets*, *Skirrets*, *Scorzonera*, *Horſe-Radiſh*, *Potatoes*, *Onions*, *Garlick*, *Shallots*, *Rocambole.*

Pot-Herbs are *Sellery*, *Parſly*, *Sorrel*, *Thyme*, *Savory*, *Beet-Leaves*, and *Clary*, out of the Garden: And of dry'd Herbs, we have *Minth*, *Sweet Marjoram*, and Flowers of the *Marygold.*

Herbs for boiled Sallads are *Cabbages*, and the *Sprouts* of *Cabbages*, ſome few *Savoy Cabbages*, and *Spinach.*

We have *Cucumbers* upon thoſe Plants ſown in *July*, if we have kept them well guarded from Rain and Froſt.

Sallads for this Month, are the ſmall Herbs on the *Hot-Bed*, with *Burnet*, *Cabbage-Lettuce*, *Sellery*, and *Endive* blanch'd, and young *Onions*.

We have yet ſome *Grapes*, *Peaches* and *Figs*, with *Apples* and *Pears* of ſeveral Sorts; ſome *Bullace*, *Walnuts*, *Hazlenuts*, *Cheſnuts*, *Medlars*, and *Services*, with ſome *Arbutus* or *Tree-Strawberries*.

## *Works to be done in the Kitchen-Garden in* DECEMBER.

THIS Month, commonly called the *Black Month*, is ſubject to every Sort of Weather which is fatal to Plants of a tender Nature. All Vegetables of our Climate ſeem now to ſleep, the Days are ſhort, and every little Warmth from the Sun makes every curious Lover of Gardens wiſh for the Spring; tho' indeed 'tis now an ingenious Gardener will ſhew his Skill, in helping Nature by Artifice, to produce ſuch Fruits and Herbs as ſhe is not capable of bringing forth without very extraordinary Aſſiſtance.

Guard againſt the Violence of Froſts, which commonly begin with great Severity to reign in this Month.

In bad Weather, and chiefly in the long Evenings, a Gardener ought to employ himſelf in his Study, in preparing and fitting up his Garden-Tools, and making ſuch Shelters for tender

Plants as will now be requir'd. He ought to provide his Shreds for nailing, and look over his Fruitery, removing all ſuch Fruits as are any ways damaged, for they ſpoil the reſt.

Examine Orchard Fruit-Trees, and take away ſuch Branches as make Confuſion, covering every conſiderable Wound with ſome of the following Mixture:

Take of *Bees-Wax*, *Roſin* and *Tar*, equal Quantities, to which add of *Tallow* about half the Quantity of any one of the former; melt and mix them together in an Earthen-Veſſel well glazed, and immediately after any Amputation, dip a painting Bruſh in this Mixture, and cover the Wound with it; this will keep the wet and cold Air from penetrating into the Body of the Plant, and keep it from rotting.

Set Traps for Vermin; they now deſtroy your Roots and Seeds.

In open Weather we may ſow *Peaſe* and *Beans*, of the ſame Kinds, and in the ſame Manner, as directed in the former Month.

We muſt now look carefully after our Hot-beds, and add to their Heat, if they begin to cool, by lining them with hot Dung; but we muſt always remember the Deſign of theſe Beds is rather to defend the Plants in them from Cold, than to make them grow quick. If we were careful to raiſe Plants of *Cucumbers* and *Kidney-Beans*, as I directed in *Octobcr*, we ſhall now ſee them in a hopeful State, and much more capable of reſiſting the Froſts than thoſe that were ſown at the Beginning of this Month, as many Gardeners are uſed to do.

Towards the Middle of the Month make a Hot-bed for *Aſparagus*, to be order'd in the ſame Manner as that made in *November*.

Sow upon a Hot-bed, *Lettuce*, *Radiſh*, *Creſſes*, *Muſtard*, and other Herbs which are hot, to cut for ſmall Sallads.

In froſty Weather bring into the Garden the neceſſary Manures for inriching the Ground.

## *Products of the Kitchen-Garden in DECEMBER.*

We have now many Sorts of *Cabbages* and their Sprouts for boiling, and *Spinach*.

In the Conſervatory we have ſome *Collyflowers* and *Artichoaks* preſerved in Sand.

The Roots for this Month are the ſame as in the laſt.

Sallads are the ſmall Herbs upon the Hot-bed, with *Minth*, *Tarragon*, *Burnet*, *Cabbage-Lettuces* preſerved under Glaſſes, with ſome *Creſſes* and *Chervil* upon the natural Ground, which have a high Taſte, and help the Sallads of this Seaſon very much; and with theſe we have *Sellery* and *Endive* blanched.

Herbs for Soups and the Kitchen Uſe, are *Sage*, *Thyme*, *Savory*, *Beet-Leaves*, the *Tops* of young *Peaſe*, *Parſly*, *Sorrel*, *Spinach*, *Chervil*, *Sellery* and *Leeks*, with *Sweet Marjoram* and *Marygold-Flowers* dry'd, and alſo dry'd *Minth*; for the *Green Minth* at this Time of the Year is ſcarce, and not ſo good for Sauces as for Sallads.

We have *Aſparagus* upon Hot-beds; and, if we have been diligent, we have yet ſome *Cucumbers* upon the Plants ſown in *July* and *Auguſt*.

We have Plenty of *Pears* and *Apples*.

Monthly

# Monthly DIRECTIONS

## For ordering the

## *Green-Houſe* and *Flower-Gardens.*

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### *JANUARY.*

IF the Weather be very ſevere in this Month, fling ſome looſe Straw over your Beds of *Anemonies* and *Ranunculus*; or if ſuch Beds of Flowers are already covered with Snow, let it remain till it begins to thaw, and then we cannot be too expeditious in removing it; for the Snow-Water has a very ill Effect upon Bulbs and Roots of this Kind, if we ſuffer it to ſink into the Ground about them; and beſides, if a froſty Night ſhould ſpeedily follow a Thaw, the Wet near the Surface would freeze into a thin Ice, which would cut or wound the Leaves or Stems of theſe Flowers, and make them decline.

If the Weather is gentle and open, plant *Anemony* and *Ranunculus* Roots in Beds of Earth well wrought with a Spade; and indeed if it were ſifted, it would be much better. *Note*, The Earth cannot well be too light for theſe Flowers, and eſpecially the *Ranunculus*: It ſhould be freſh, and free from any Mixture of Dung, which breeds Vermin, and is ever deſtructive to Roots of this Kind.

About the Middle, pick off the dead and wither'd Leaves from your *Auriculas*, and take away as much Earth out of each Pot as poſſible, without diſturbing the Roots, to make Room for ſome freſh Earth, prepared with ſandy Loam mix'd with one third Part of rotten Wood.

*Note*, That in filling up the Pots with this Earth (which muſt be well ſifted) preſs it gently about the Roots, and raiſe it quite to the Leaves, but bury none of them, for they will decay.

*Note* alſo, All compoſed Earths ſhould lye at leaſt a Year before they are uſed.

Guard well againſt the Mice, for this Month they deſtroy all bulbous Roots they can come at, particularly the *Crocus*.

In the Green-Houſe, pick off all mouldy and wither'd Leaves from the Plants; for whatever they touch they infect. Give no Water to any Plant that will hold up its Head without it; and in ſevere Weather, rather endeavour to keep the Cold out of the Houſe, than make the Plants grow by any forcing Heat; for Shoots made at this Time of the Year are ſickly, and weaken the Plant. Upon a Thaw, make a ſmall Charcoal Fire or two, in Proportion to the Bigneſs of the Houſe, and let in a little Air at the ſame Time, if the Wind is not too cold: Theſe Fires dry the Damps which ariſe always after a Thaw, and by deſtroying thoſe poiſonous Vapours, keep the Plants dry, and free them from the Danger of rotting.

Tranſplant the *Winter Aconite* in Flower, and part its Roots; for when the Leaves of this Plant are decay'd, 'tis very hard to find the Roots.

## *Flowers blowing in the Green-Houſe and Flower-Garden in JANUARY.*

SEveral of the *Ficoides* are now in Flower, and *Aloes* of ſeveral Sorts begin to put forth their Flower-Stems. The *Indian Yellow* and the *White Spaniſh Jeſſamines* have yet ſome Bloſſoms upon them, and ſome ſickly *Orange-Trees* bloſſom about this Time. The Plant known to the Gardeners by the Name of the *Candy Tuft Tree*, or *Thlaſpi Sempervivens*, is yet in Flower, and ſome Kinds of the *Geranium*.

In the Flower-Garden we have in Bloſſom the *Winter Aconite*, *Single Wall-Flowers*, the *Chriſtmas Flower*, or *Black Hellebore*, and that Sort with a green Flower; *Snow-Drops*, double and ſingle, the *Brunal Hyacinth*, ſome *Stock-July-flowers*, where they are well ſhelter'd, *Single Anemonies*, the *Gentianella*, the *Winter Cyclamen*, *Primroſes*, and ſome Kinds of the *Polyanthos*, the *Laurus-Tinus*, *Mezerions White* and *Red*, and the *Arbutus* or *Strawberry-Tree*. The *Holly* and *Pyracantha* are now adorned with their beautiful Scarlet Fruit, and likewiſe the *Amomum Plinii*.

We have now alſo the *Glaſtenbury Thorn* putting forth a few faint Flowers, if the Froſts do not hinder; and as this Plant uſually begins its bloſſoming in *December*, it has given Room for ſome ſuperſtitious Perſons to look upon it as a

Miracle, thinking the Flowers appear only upon *Chriſtmas-Day*, as the Story goes of it. *Joſeph* of *Arimathea*, they ſay, coming into *England*, brought with him a Staff of this Thorn-wood, and ſet it, upon a *Chriſtmas-Day*, in the Ground at *Glaſtenbury*, where it immediately took Root, budded, and bloſſom'd; and ſo it has continued to do ever ſince upon that Feſtival, as the People tell us, in Honour of St. *Joſeph* its Maſter: But the Plant being now pretty well known, and cultivated in ſeveral Places, we find it very apt to miſtake a Week or two in the Time of its bloſſoming, according as the Winter has been more mild or ſevere: ſometimes I have ſeen it in Flower the Beginning of *December*, and at other Times it has not budded 'till the Middle of *January*; however, it ſeldom fails of Flowers about that Seaſon, and has nothing more in it than what we find in all other Plants brought from foreign Parts, which at the Time of their natural Spring are ever diſpoſed to bloſſom, notwithſtanding the Oppoſition of our Seaſons; and it is not unreaſonable to think, this Plant was originally brought from ſome Country where the Spring is about *December*, ſuch as *Arabia*, the *Holy-Land*, and many other Places about the ſame Latitude: And if it was true that the firſt Plant of it at *Glaſtenbury* grew from a plain Staff or Twig without Root or Branch, it is no Wonder, although it had been taken from the Tree ſix Months before; for I have frequently cultivated Plants in as bad a Condition, which have been longer than ſix Months without Earth, and they have grown very well; ſome Stakes of the *Willow*, for Example, will do the ſame. This Plant may be increaſed by grafting it upon the *White-Thorn* in *March*.

Such as are minded to make Gardens of Flowers for the ſeveral Months in the Year, may compoſe them from theſe Catalogues of Flowers blowing in the ſeveral Seaſons, only obſerving, that ſuch as are to be in their Perfection in the Winter, ſhould have as much of the Sun's Benefit as poſſible.

## *Works to be done in the Green-Houſe and Flower-Garden in FEBRUARY.*

CONTINUE the Works of the former Month, if the Seaſon has not then been favourable enough to finiſh what was directed to be done.

The firſt Week ſow *Auricula* Seeds in Caſes filled with light Earth, ſuch as rotten Wood or Leaves, but chiefly (if we can get it) the Earth taken out of the hollow Places in *Willow-Trees.* When the Earth is raked level, ſow the Seeds upon it, and then preſs all down with a Piece of ſmooth Board; cover theſe Boxes with Nets, and let them ſtand in ſome ſhady Place, giving them frequent Waterings 'till they come up. [See my *New Improvements*, Part II.]

Now likewiſe ſow the Seeds of *Polyanthos* very ſhallow upon ſome ſhady Border.

Mix *Anemony* Seeds with dry Sand, and ſow them in very light Earth, allowing them a thin Covering of Mould well ſifted.

We may ſtill put into the Ground, in ſome ſhady Place, Roots of the *Anemony* and *Ranunculus*, to blow late.

About the Middle of the Month give freſh Earth to your *Carnations* that were planted out in *Autumn*; thoſe Flowers will blow much ſtronger than ſuch as are planted out for blowing in *March*.

Turn and ſkreen Mould for the Uſe of the next Month.

If the Weather be open, tranſplant all Sorts of flowering Shrubs, which bear the Weather, *viz. Syringa*, *Lylac*, *Guilder Roſe*, *Laburnum*, *Roſes*, *Jeſſamine*, *Honeyſuckles*, *Spireas*, *Altheas*, &c.

Part and tranſplant *Pæonies*.

Towards the End, ſow *Larkſpurs*, *Holly-oaks*, *Canterbury-Bells*, *Primroſe-Tree*, *Sweet-Williams*, *Annual Stocks*, *Candy-Tufts*, *Pinks*, and the *Scarlet Lichneſs*, eſpecially if the Soil be light; but in ſtiff Soil we may delay that Work 'till about the tenth of *March*.

'Tis now a right Seaſon to ſhift ſuch *Myrtles* as want large Pots; at the ſame Time ſhaving off the outſide Fibres of their Roots, and, if they have Occaſion, prune their Heads pretty cloſe.

Alſo about the End of this Month, head *Orange-Trees*, and give them freſh Earth, always minding to wax thoſe Wounds we have made with ſoft Wax. [See my *New Improvements*, Part III.]

Stir the Surface of the Earth in your Pots in the Conſervatory, but be not over haſty in giving Air to your tender Plants, for they will not yet bear it. 'Tis now the Time that many Exoticks periſh through the Indiſcretion of ſome Gardeners, who are tempted to open the Windows of the Green-Houſe, when the Sun ſhines a little favourable upon the Plants.

We may now make Layers of *Roſes*, *Jeſſamines*, *Honey-ſuckles*, *Phillarea*, *Laurus-Tinus*, and other ſuch like Shrubs.

Sow the Seeds of the *Laburnum*, *Spaniſh-Broom*, and the *Berries* of *Bays*, *Yew* and *Holly*.

Sow exotick Seeds from the hotteſt Climates upon Hot-beds, eſpecially the annual Kinds, which require ſeveral Months, and great Heat to bring them to Perfection.

Now cut down the *Spaniſh Jeſſamine* within four Inches of the Stem, at the ſame Time giving them freſh Earth.

Make Layers of the *Yellow*, *Indian*, and *Portugal White Jeſſamines*, *Pomgranates*, *Olives*, and *Arbutus*, minding to interr only the moſt tender Branches; for thoſe which are once become woody will never take Root.

Sow *Orange* and *Lemon* Kernels in Pots as ſoon as they are taken out of the Fruit, and ſet the Pots in Hot-beds.

Now make Plantations of the *Lilly of the Valley* on the Side of ſome ſhady Bank.

## *Flowers now blowing in the Green-Houſe and Flower-Garden.*

WE have ſeveral Kinds of *Hellebore* yet flowering, the *Winter Aconites*, *Snow-drops*, chiefly that with double Flowers, *Crocus*, both the *Yellow* and the *Purple* Kinds, ſome *Hyacinths*, *Single Anemonies*, *Perſian Iris*, *Single Hepaticas*, *Single Dafodils*, *Single Wall-Flowers*, ſome *Double Daiſies*, *Stock July-flowers*, and the *Spring Cyclamen*; and in the Green-Houſe, the *Thlapſi Sempervivens*, ſome *Ficoides*, *Geraniums*, *Aloes*, and the *Yellow Indian Jeſſamine*.

Some

## *Works to be done in t*
## *Flower-Garden i*

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Defend your *Tulips* from

Now mend and repair your Shelves and Places of Shelter for blowing your *Auriculas*, for at the End of this Month they ſhould be ſet in Order. This Place ſhould face the *Eaſt*, and be defended on every other Side from the Sun: The Top ſhould have a Covering of Baſt-Mats, or Canvas, to keep the *Auriculas* from Wet; for the leaſt Rain imaginable ſpoils the Beauty of theſe Flowers.

About the Beginning of the Month, tranſplant your *Carnation* Layers for blowing, if they were not planted out in *Autumn*, which is much the beſt Time for that Work. Let the Earth for theſe Flowers be two Thirds of ſandy Loam, well incorporated with one Third of rich *Melon* Earth, or rotton Wood: This Mixture ought to be, at leaſt, two Years old, before it is uſed.

Sow now upon the Hot-bed ſuch exotick Seeds as are leſs tender, and come ſooner to Perfection than thoſe ſown the laſt Month; ſuch as the *Naſturtium Indicum*, *French* and *African Marygolds*, *Balſamines*, *Convolvulus*, eſpecially the little *Blue*, the *China*, or *Indian Pink*, and ſuch others as would have been too rampant for the Hot-bed, if they had been ſown the laſt Month: for 'till the Middle of *May*, we muſt not venture any of theſe abroad in the natural Ground; and therefore if they were to be ſown early, they would touch the Glaſſes long before we could give them Liberty enough.

If we have not the Conveniency of Hot-beds, we may defer the ſowing of the *African* and *French Marygold*, the *Naſturtium* and *Marvel of Peru*, 'till the next Month, and then they will come up in the natural Ground, if they are ſown under ſome warm Wall.

Delay no longer to ſow the Seeds of the *Humble* and *Senſitive Plants* upon the Hot-bed; they are wonderful Curioſities, but muſt always be kept under Glaſſes.

Now ſow, in the natural Ground, the wild *Spirting Cucumber*, and the *Noli me tangere*; they are diverting Plants, when their Fruit is full ripe.

Give freſh Earth to your Pots of the *Campanula Pyramidalis*, and ſet them into ſome Pit where the Sun may come at them; this Method will make them grow tall, which is the chief Excellency of this *Plant*.

Now likewiſe ſow their Seeds, and take off Slips from the Roots.

Plant *Tuberoſes* in Pots of freſh Earth, giving them a gentle Heat, and no Water, 'till they ſprout.

Tranſplant now the *Arbor Judæ*, and ſow the Seeds of it.

Graff the *Spaniſh White Jeſſamine* upon the common *White Engliſh* Sort.

Plant and make Layers of the *Paſſion-Tree* in moiſt Places, to make it bear Fruit.

Put ſuch exotick *Plants* into a Hot-bed as have ſuffered in the Conſervatory; but take ſpecial Care they are well guarded from the Steam of the Dung, by a due Thickneſs of Earth laid upon it.

Now tranſplant the *Amomum Plinii*, or *Winter Cherry*; prune their Roots, and ſhorten their Branches, give them freſh Earth, and ſet them in the Front of the Green-Houſe, for they are hardy, and will now bear the Air. *Note*, They are great Lovers of Water, and if they have Shade enough when they are ſet abroad, they will bear Fruit plentifully.

Take eſpecial Care now of your *Orange* and *Lemon-Trees*, that they don't want Water, give them little at a Time, and often; uſe them by Degrees to the Air, and we may preſerve their young Fruit, which is very apt to fall at this Seaſon of the Year, if they are over-water'd, or are too haſtily made acquainted with the Air.

Towards the End, we may tranſplant *Yews*, *Hollies*, *Phillarea*, and other *Ever-greens*, and ſow the Seeds of the *Evergreen Privet.*

Mind to water your Caſes of *Auricula* Seeds.

In a warm Day, begin to give a little Water to the moſt ſucculent *Ficoides.*

## *Flowers now blowing in the Green-Houſe and Flower-Garden.*

WE have now *Anemonies* both double and ſingle, *Hyacinths*, *Junquils*, ſeveral Kinds of *Narciſſus*, and chiefly the *Narciſſus of Conſtantinople*, ſome of the *Precope Tulips*, and of the later Kinds of *Crocus*, particularly the *White Polyanthos* of all Sorts, *Violets*, *Daiſies*, *Wall-Flowers*, *Stock July-flower*, *Iris* of ſeveral Kinds, *Hepaticas*, of the double Sorts, *Crown Imperial*, *Dens Caninus*, *Grape Hyacinths*, and ſome Sorts of *Fritilaria*, a Flower now highly in Requeſt in *Holland*, for its vaſt Variety (as I am inform'd); and towards the End, we have ſome few *Auriculas.*

The Trees in Bloſſom are the *Almond*, *Apricot*, *Peach*, *Arbor Judæ*, *Laurus-Tinus*, ſome *Oranges*, and we have ſtill ſome Flowers of the *Indian Yellow Jeſſamine*, with ſome Sorts of *Ficoides*, or *Fig-Marygolds*, and *Aloes.*

## *Works to be done in the Green-Houſe and Flower-Garden in APRIL.*

WE may begin this Month with ſowing in the natural Ground, the leſs tender exotick Seeds, and ſuch Flower-Seeds, as we have omitted to ſow in the preceding Month. Many Seeds from the *Cape of Good Hope*, and from *Virginia*, will come up, being ſown at this Time of the Year in natural Borders well expoſed.

We may now ſow *Scarlet Beans*, *Scabicus*, *Columbines*, *Marygolds*, *Gnaphalium*, and *Cyanus*.

We may now ſow *Pine* and *Fir Seeds*, covering them with a Net to keep them from the Birds, who are very voracious of them, even after they are come up.

We may yet part and ſet all Fibrous-rooted *Plants*.

Now is the beſt Time of the *Spring*, to remove all Sorts of *Evergreens*, putting large *Hollies* in Baſkets for their greater Safety in Tranſportation; for *Hollies*, at beſt, have but few Roots, and can hardly hold their Earth without this Help. Plant their Baſkets with them; but *Yews* will do well enough without this Charge; if they have been dug about in the Nurſery, their Roots will be full of little Fibres, and will hold the Earth together.

Make freſh Hot-beds to forward your young Seedling *Oranges* and *Lemons*, and other exotick *Plants* now come up, and fit to tranſplant from the firſt Hot-bed.

Pot ſome of your *Amaranthus Tricolor* and *Cocks-combs*; give them a freſh Bed to draw them tall.

About the Beginning, your *Auricula* Seed will begin to appear above Ground, if it has been carefully water'd, and before let it not want at this Time, for the young *Plants* will ſoon wither. Keep thoſe Caſes in the Shade, 'till *Auguſt*, that we plant them out.

Begin now to water your *Aloes*, *Sedums*, *Torch-Thiſtles*, *Euphorbiums*, and other tender ſucculent *Plants*; but give it in very ſmall Quantities when the Sun ſhines hot, and now begin to uſe thoſe tender *Plants* to the Air, by little and little.

The Windows of the *Orangery* may now be open from Morning 'till Night, if the Winds are not very violent.

Stick up your *Carnations*.

After Rain, clip your Edgings of Bog, roll your Graſs and Gravel-Walks; alſo rake over, and renew, if there is Occaſion, your Walks of Cockle Shells, and Works in Sand, cut the Edges of your Graſs, and mow it often, for now it grows apace.

Stake up all *Plants* and *Flowers* which are now grown to any Height, for the Winds are now dangerous.

Deſtroy Weeds before their Seeds are ripe.

The *Auriculas*, which are now in their full Bloom, ſhould once in three Days be refreſhed with moderate Waterings; the Flowers will be the better coloured for it, and the Seed come to greater Perfection; but keep the Sun and Rain from them.

*Flowers*

## *Flowers now blowing in the Green-Houſe and Flower-Garden.*

THIS Month furniſhes us with great Variety of *Ranunculus* and *Double Anemonies*, and, towards the End, we have ſome *Tulips*.

*Daiſies* alſo ſtill continue flowering, as do alſo the *Double Hepaticas*, and *Polyanthos* of divers Kinds. We have ſeveral Kinds of *Narciſſus* and *Double Junquils* now in their Prime. The *Crown Imperial* is not yet paſt flowering, and we have now ſeveral Sorts of *Iris* and *Fritillaries*, with ſome *Hyacinths*. We have alſo ſeveral Kinds of *Cyclamen*, ſome *Stock July-flowers*, and *Single Pæonies* towards the End; ſome *Double Violets* yet remain: But above all, we are now rewarded with the *Auricula*, which is in its Prime about the 20th. The Trees and Shrubs now blowing, are the *Lylac*, *Perſian Jeſſamine*, *Laburnam*, *Double* and *Single-bloſſom'd Almonds*, the *Arbor Judæ*, ſome *Pears*, *Cherries* and *Apricots*; and in the *Green-Houſe*, ſome *Oranges*, *Ficoides*, *Aloes*, and ſome Kinds of *Geranium*.

## *Works to be done in the Green-Houſe and Flower-Garden in MAY.*

CUT down the Leaves and Flower-Stems of *Crocus*, and other bulbous-rooted Flowers that have done blowing, unleſs you deſign any of them to ſtand for Seed; and indeed I would adviſe every curious Perſon to ſave ſome of the beſt every Year, to have Nurſeries of Seedlings of every Flower; for from ſuch Seminaries we may expect numberleſs Varieties.

Gather now your *Anemony* Seed as it ripens, for it is quickly carried away by the moſt gentle Air.

About the Tenth is the beſt Time to ſow *Carnation* Seeds; for if they were to be put ſooner into the Ground, they would grow woody before *Winter*, and many of them canker and go off. Let the Earth be freſh ſandy Loam, well ſifted.

Our choice *Tulips* are now in Flower, and muſt be ſhaded from the Mid-day Sun, and defended from the Rain, if we are minded to have them laſt a long Time in Flower; when they have done blowing, break off the Seed-Pods, that the Roots may gather Strength.

If any one has a Mind to dry ſome of his choiceſt *Tulip-Leaves*, he muſt provide Books of brown Paper, and lay the Leaves of the Flowers ſingly between the Leaves of the Book; when they have been in this State for a Day, preſs'd down by a very gentle Weight, they muſt be ſhifted into a freſh Book, and removed in like Manner from one Book to another every twenty-four Hours, adding more Weight as they grow dryer: In fine, when all the Moiſture is out of them, we may then ſtick them upon thick white Paper, with a little *Gum-Arabick* and fair Water, and they will hold their Colour for many Months.

I the rather mention this Way of drying Plants and Flowers at this Time, becauſe every Lover of *Botany* is not perhaps rightly ſkilled in preſerving Specimens of *Plants*, and alſo becauſe this Month affords us greater Variety of *Plants* for that Purpoſe, than any other Month in the whole Year.

Be now careful to tye up the Spindles of your *Carnations*, leſt they are broken by the Winds or other Accidents.

Repeat the Sowing of many annual Flowers, ſuch as the ſmall *Annual Stock*, *Venus Looking-Glaſs*, and *Candy-Tufts*, giving them frequent Waterings (if the Weather be dry) 'till they come up.

About the fifteenth, if the Weather be gentle and ſettled, which is (as ſome ſay) when the *Mulberry-Leaves* are as large as a *Crow*'s Foot, bring your *Orange* and *Lemon* Trees out of the Conſervatory. What I here mention of the *Mulberry*'s indicating to us the proper Time for bringing Abroad our tender *Plants*, has, in my Opinion, Reaſon enough in it, (though ſome will not allow it as a ſure Rule to go by) for the *Mulberry-Tree*, which is a foreign *Plant*, and has a thicker Juice than any other Tree that I know of, requires (as we find) a ſettled Warmth and equal Temperature of Air to put its Juices into Motion; and as that Motion cannot in a few Days ſhew itſelf in the Production of the Leaves, and would ſtop upon the leaſt Appearance of Froſt, ſo of Conſequence, when we ſee the Leaves of this Tree arrived at the Largeneſs of a *Crow*'s Foot, we may be aſſured the Weather has been, for ſome Time, in a gentle State, and therefore our *Orange-Trees* may then come Abroad with Safety; for we have had no Inſtance of Weather that has been capable of injuring the *Orange-Tree* after enjoying a ſerene Week in this Month. It is a Thing worthy our Remark, how many different Degrees of Heat or Cold are neceſſary to the Vegetation of ſeveral Kinds of *Plants*. The Temper of Air in *January*, puſhes forth the Buds of the *Elder-Tree*; the greater Warmth in *February* puts the *Gooſeberry-Buſh* and ſome Sorts of the *Quickſet* in Motion; in *March* we ſee the Bloſſoms of the *Almond* and *Peach-Tree*; in *April*, the *Elm*, and ſome others, begin to open their Leaves, and the *Mulberry* will not ſtir 'till the Weather of this Month is ſettled; and every *Plant* may perhaps require a diſtinct Degree of Heat and Cold, call it what you will, to make it vegetate. This is not unlike what we obſerve in Melting or Liquifying of metalick and other Bodies. Ice will melt with leſs Heat than Tallow, Tallow with leſs Heat than Wax, Wax with leſs Heat than Roſin, Roſin than Lead or Tin, and theſe will melt with leſs Heat than other Metals.

Upon bringing out your *Orange-Trees* and other Exoticks, clean their Leaves from the Duſt they have got in the Houſe, unleſs a gentle Shower ſaves you that Trouble; give them all freſh Earth on the Surface of their Pots or Caſes, and water them well when they are placed in the Order they ſhould ſtand. Let not the Sun ſhine too hot upon your *Orange-Trees*, for that will make their Leaves turn yellow.

Now make Cuttings of *Ficoides* and *Sedums*, letting ſuch of them as are very ſucculent lye a Day or two in the Sun, after they are cut from the *Plants* to dry the wounded Parts, and then plant them in an open Border to be potted, after they have ſtruck Root, which will be in leſs than two Months.

Plant Cuttings of the *Arabian Jeſſamine*; they eaſily take Root.

Plant Cuttings of *Geraniums*, and other ſuch like exotick Shrubs, in ſome open Border; they will take Root better there than in Pots.

*Indian Yello*
Stocks of the commo
not fearful that theſe
Stocks, becauſe our co
Leaves, and the others
the Truth of it, as w
*Laurel* upon the *Black-C*
very freely.

Such as are minded
the Uſe of the next *Win*
delay that Work, leſt
roughly dry when the
and I cannot help takin
the Intent of ſuch a Buil
ed by the Architect;
ſeen one *Green-Houſe* in
Beauty of a good Build
nience for the keeping
Time, which is one Reaſ
been diſcouraged from t
Plants.

Towards the End of t

Abroad fifteen Days before you put them in a Hot-Bed.

When the Weather is ſettled, tranſplant from the Hot-Bed to the open Borders all your choice Annuals, as *Capſicums*, *African* and *French Marygolds*, *Amaranthus*, *Baſils*, *Convolvulus*, *&c.*

Plant Cuttings of *Pyracantha* of the tender Shoots, and Cuttings of the *Paſſion-Tree*, in moiſt Places.

## *Flowers now blowing in the Green-Houſe and Flower-Garden.*

OUR choiceſt *Tulips* are now in Flower, as alſo ſome *Stock July-flowers*, *Double Wall-flowers*, *Monkſhood*, *Single Scarlet Lichneſs*, *Double Pinks*, *Sweet-Williams*, *Double Yellow Globe-flowers*, *Sea Pinks*, *Candy Tufts*, *Venus Looking-Glaſs*, *Annual Stock*, *Periwinkle*, *Double Daiſies*, and *Featherfew*, *Foxgloves*, *Muleins*, *Bulbous Iris*, ſome *Anemonies* and *Ranunculus* that were put late in the Ground, *Double White Rocket*, *Honeyſuckles*, *Pyracantha*, *Syringa*, *Roſes*, *Apple Bloſſoms*, *Spireas*, *Spaniſh Broom*, *Guilder Roſes*, *Laburnum*, *Canterbury Bells*, *Cytiſſus*, *Columbines*, *Larkſpurs*, *Gladiolus*, *Poppies*, *Pæonies*, *Fraxinella*, *Spider-wort*, *Cyanus*, *Antirrhinum*, *Valerian*, *Martagons*, *Lillies*, *Orchis*, *Iris*, *Marygolds*, ſome *Lupines*, *Oranges*, *Ficoides*, *Aloes*, *Sedums*, *Geraniums*; and in the Water-Tubs, the *Yellow Nymphea* or *Water-Lilly*, *Pond-Weeds*, *Water-Ranunculus*, the *Flamula* or *Spearwort*, and *Frogbits.*

'T IS now a goo
bulbous Roo
Waſh them c
taken them c
ſpread them u
that they may be well dry'
up in the Houſe.

'Tis now the beſt Sea
Roots of *Cyclamen*, *Saffron*,

Now viſit the Rivers,
and Ditches, for choice ac
may tranſplant them, altho
ing, into our Water-Tubs,
pretty Show among exotic
Plants. When you collect
Waters, obſerve the Depth c
in, and allow them the ſam
you plant them in the Tubs.

Lay ſuch of your *Carnat*
enough, and carefully pick
moſt tender Flower-Buds, for
Pods of their Nouri

Pod. Alſo deſtroy Earwigs with *Oxhoofs* and *Tobacco-Pipes*; for the Way of guarding your *Carnations* from theſe deſtructive Inſects with Baſons and Troughs of Water, is of little Signification, becauſe they have Wings, though not eaſily diſcovered.

Gather *Auricula* and *Polyanthos* Seed, and preſerve it in the Seed-Pods till you ſow it.

Bring abroad your *Aloes*, *Torch-Thiſtles*, *Euphorbiums*, and tender *Tithimals*, and clean them from the Duſt they have contracted in the Houſe: Alſo pull off with Care the decay'd Leaves of your *Aloes*, and tranſplant them, if there is Occaſion, into bigger Pots.

We may now take off Cuttings of the *Euphorbium* and *Torch-Thiſtle*, letting them lye in the Sun till the Wounds are healed, before we put them into the Ground; let the Earth for them be the ſame as I directed for the *Indian Fig*.

Now take off the Off-ſets and Suckers growing about the Roots and Stems of your *Aloes*; plant them in the ſame Earth mention'd above, and let them remain abroad fifteen Days before they are ſet into a Hot-Bed. Give theſe ſucculent Plants little Water till they have taken Root.

Water *Oranges* (which are now in Flower) frequently, a little at a Time, that the Fruit may ſet; and pick off the Bloſſoms where they are too thick. Now you can hardly give your *Myrtles* too much Water; remember they naturally grow in Marſhy Ground.

Continue to tranſplant Annuals after Rain, and ſow others to ſucceed thoſe ſown in the former Months.

## *Flowers now blowing in the Green-Houſe and Flower-Garden.*

WE have now blowing *African* and *French Marygolds*, *Convolvulus*, *Female Balſams*, *Amaranthus*, *Larkſpurs*, *Candy-Tufts*, *Venus Looking-Glaſs*, *Annual Stocks*, *Stock July-flowers*, *Double Scarlet Lychneſs*, *Roſe Campions*, *Sweet-Williams*, *Campanulas*, *Fox-gloves*, *Muleins*, *Moth-Muleins*, *Sea Pinks*, *Double Pinks*, *Virgins Bower*, *Periwinkle*, *Cyanus*, *Lillies*, *Martagons*, *Monks-hood*, *Sun-flowers*, *Holly-hocks*, *Naſturtium Indicum*, *Gentian*, *Virginian Spiderwort*, *Scarlet Beans*, *Sweet Sultan*, *Poppies*, *Pomegranates*, *Olives*, *Oranges*, *Lemons*, *Geraniums*, *Ficoides*, *Sedums*, *Fritillaria Craſſa*, *Roſes*, *Honeyſuckles*, *Jeſſamine*, *Oleander*, *Spaniſh Broom*, *Hellebore*, *Indian Fig*, ſome *Carnations*, *Double flowered Featherfew*, *Valerian*, *Sea Ragwort*, *Orchis*, *Antirrhinum*, *Lupines*, and *China Pinks*. In the Water Tubs we have the *Double White Nymphea* or *Water-Lilly*, the *Single Yellow*, the *Water-Violet*, and *Water-Milfoil* in Flower.

## *Works to be done in the Green-Houſe and Flower-Garden in JULY.*

WE may yet continue to lay *Carnations* as they gather Strength, and often refreſh them with Water, ſhading the Bloſſoms from the violent Heat of the Sun.

Continue to deſtroy Weeds, and cut down the Flower Stems of ſuch curious Flowers as have done blowing, unleſs they are worth ſaving for Seed.

Now is the beſt Time to raiſe *Myrtles* of Cuttings, taking only the moſt tender Shoots; ſet them in the Shade, and give them frequent Waterings.

Tranſplant now ſuch Bulbs as you took not out of the Ground the laſt Month.

We may ſow *Tulip* Seeds, which are now ripe, in Caſes of light Earth, that they may be carry'd under ſome Shelter in the Winter. Sow alſo ſome *Anemony* Seed as directed in *February*, and ſprinkle it often with Water.

Clip for the ſecond Time *Box Edgings.*

Continue to make Cuttings of *Torch-Thiſtles*, *Indian Figs*, *Fig-Marygolds*, *Tythimals*, *Sedums*, and other ſucculent Plants.

Give freſh Earth to the Surface of your *Orange* Tubs, which Work ſhould be done at leaſt four Times a Year.

About the 20th, inoculate *Orange* rather upon *Lemon* Stocks than any other.

This is the Time when the Berries of the *Coffee-Tree* ripen; they are then of a bright red Colour, and may be gather'd for ſowing immediately, cleaning their Seeds from the Pulp: Set them ſingly about an Inch deep in Pots of fine Earth, and give them the Aſſiſtance of a Hot-bed, by which Means they will ſprout in leſs than ſix Weeks Time, as I have ſeen at the Phyſick Garden at *Amſterdam*. This Plant being a great Rarity, ſee the Figure of it, *Plate* I. *Fig.* II.

The Fruit of the *Ananus* being ripe about this Time, cut off the Crown of Leaves which grows on the Top of it, and plant it in light ſandy Earth; it will preſently ſtrike Root with the Aſſiſtance of a Hot-bed made of *Tanners Bark*, for they will not bear the Steam of Horſe-dung.

We may alſo now lay down young Shoots of the *Arabian Jeſſamine.*

Tie up and prune all your Exotick Plants which grow diſorderly; they will be covered with freſh Shoots before they are ſet into the Houſe.

Gather ſuch Flower Seeds as are now ripe, drying them well in their Seed-Veſſels before they are beaten out; and even after that, dry them in the Sun for a Week or ten Days before you lay them up, for elſe they will be ſubject to rot.

Yet ſow ſome *Annuals* in Edgings, to blow in *September*; for then the Garden wants Flowers.

## *Flowers now blowing in the Green-Houſe and Flower-Garden.*

THE *Carnation* is now the Glory of the Flower-Garden, and the Seedlings of that Flower offer ſomething new every Day. The other Flowers now blowing, are *Oranges*, *Lemons*, *Myrtles*, *Coluteas*, *Oleanders*, *Geraniums*, *Paſſion-flowers* of ſeveral Kinds, *Jeſſamine* of *Arabia*, *Brazil Jeſſamine*, common *White Jeſſamine*, *Pomegranates*, *Olives*, *Capers*, *Bean Caper*, *Ficoides*, ſome *Aloes*, *Sedums*, *Dittany*, ſome *Roſes*, *Amomum Plinii*, *Convolvulus*, *Amaranths*, *African* and *French Marygold*, *Tulip-Tree*, *Golden Rod*, *Frittillaria Craſſa*, *Apocinum* ſeveral Sorts, *Aſphodel*, *Tuberoſes*, *Cardinal Flower*, *Double Scarlet Lychneſs*, *Campanulus*, *Virgins Bower*, *Sweet Sultans*, *Capſicum*, *Marvel* of *Peru*, *Female Balſams*,

*ſams*, *Eagle-flower*, *China Pinks*, *Sun-flowers*, *Holly-hocks*, *Foxgloves*, *Everlaſting Flowers*, *Scarlet Beans*, ſome *Double Poppies*, *Gentian*, *Fraxinella*, *Naſturtium Indicum*, *Veronica*, *Nigilla*, *Chriſanthemum*, *Lupines*, *Stock July-flowers*, *Spiderwort*, *Indian Figs*, *Arbutus*, and ſome of the late ſown *Annuals*.

## *Works to be done in the Green-Houſe and Flower-Garden in AUGUST.*

THE beginning of this Month is a good Seaſon for parting *Auriculas*, that they may gather ſufficient Strength before Spring. Rather plant one ſingle Head in each Pot than covet many, for where we leave more than one upon a Root, we muſt expect the Bloſſoms will be ſmall.

'Tis now a proper Time to tranſplant your Seedling *Auriculas* above five Inches a-part, upon a Border of well-ſifted Earth; give them a gentle Sprinkling of Water after planting, and ſhade them from the Sun with Mats for fifteen Days.

Now alſo tranſplant your ſeedling *Polyanthos* upon a ſhady Border, and divide the old Roots.

If we have any good Seeds of the bulbous *Iris*, *Frittillaries*, and *Ranunculus*, it is now a very proper Seaſon to ſow them, covering the Seeds with a thin Coat of fine-ſifted Earth. *Note*, Seminaries of this kind will reward our Patience with great Variety of beautiful Flowers. *Note* alſo, The beſt *Ranunculus* Seed comes from *France*.

Shade your *Anemony* and *Tulip* Seed, which was ſown in the preceding Month.

Plant *Single Anemonies*, and we may now tranſplant *Hyacinths*, *Narciſſus*, *Lillies*, *Martagons*, *Crocus*, and *Snowdrops*.

Cut down the wither'd Stalks of ſuch Flowers as have done blowing, and we may now part their Roots for Increaſe.

Gather Seeds in a dry Day.

The Middle of the Month, or ſomewhat later, cut the inarch'd *Orange* Stocks from the bearing Trees; but be careful you do it gently, for fear of breaking the new graffed Branch from the Stock; leave the Clay upon them 'till the following Spring, and guard them from high Winds.

It is now a good Seaſon to tranſplant *Myrtles* and *Orange* Trees, if that Work was not done in the Spring.

Uſe not your Cuttings of *Torch-Thiſtles*, *Aloes*, *Indian-Fig*, &c. too tenderly in the Hot-beds; give them Air that they may harden againſt the Winter.

Plant Slips of Pinks in a Nurſery, to plant out the following Summer.

We may now make Layers of all Sorts of Shrubs and Trees which remain abroad all Winter; always minding to lay down the moſt tender Shoots.

Toward the End, take off and plant out ſuch of your *Carnation* Layers, as are well rooted; ſet them out in the Places where they are to blow; the Flowers will be much ſtronger than those which are to be planted in the Spring. Alſo this Month we may lay ſuch *Carnations* as were not ſtrong enough in the former Month; but theſe will not be fit to tranſplant till *March* next.

Tranſplant ſeedling *Carnations* at a Foot Diſtance.

If we find any old Roots of *Carnations* which are diſpoſed to blow late, put them now in Pots of freſh Earth, to ſet into the Green-houſe in *October*; I have often by that Means had good Flowers the greateſt Part of the Winter.

Now ſet into the Houſe your *Aloes*, *Torch-Thiſtles*, *Euphorbiums*, and other ſuch tender ſucculent Plants.

## *Flowers now blowing in the Green-Houſe and Flower-Gardens.*

WE have yet ſome *Carnations*, with *Sun-flowers* and *Holly-hocks*, *Roſes*, *Pomegranates*, *Arbutus*, *Jeſſamines*, the *Common White*, *Spaniſh White*, *Braſil White*, *Indian Yellow*, and *Arabian Jeſſamine*, both *Double* and *Single Oranges*, *Myrtles*, *Oleander*, *Apocinum*, *Ficoides* of many Kinds, ſome *Aloes*, *Paſſion-flowers* of various Sorts, ſome *Sedums*, *Geranium*, *Tree-Mallows*, *Colutea*, *Guernſey Lilly*, *Tuberoſes*, *Cardinal-flower*, *Female Balſam*, *Marvel* of *Peru*, *Chriſanthemum*, *Everlaſting-flowers*, *Colchiums* Autumn *Yellow Crocus*, *Cyclamens*, *African* and *French Marygolds*, *Convolvulus*, *Capſicum*, *Starworts*, *Amaranths*, *Nigilla*, *Sweet-Sultan*, *Scabious*, *Naſturtium Indicum*, *Linaria*, *Stock July-flowers*, *Eringo*, *Virgins Bower*, and thoſe Annuals ſown late, *Annual Stock*, *Poppies*, *Larkſpur*, *Cany-Tufts*, &c. Alſo we have *Double Violets*, ſome *Auriculas* and *Polyanthos*, which now feeling a Temper of Air equal to their natural blowing Seaſon, (i. e. *April*) are led to bring forth their Flowers at this Time: Alſo the *Althea-Frutex* flowers at this Time.

*Works*

## *Works to be done in the Green-Houſe and Flower-Garden in SEPTEMBER.*

YOU have now ſeveral Kinds of Flowers riſing to a conſiderable Height; therefore to prevent Hazards by the Winds, tie them carefully to Stakes; for if Plants are looſe, a little Wind injures them.

If you have not in the preceding Month taken off your *Carnation* Layers, defer that Work no longer, but be ſure to plant them in the Places where they are to bloſſom; you will find the Advantage by ſo doing.

Now ſow *Poppies*, *Larkſpurs*, *Annual Stock*, *Candy-Tufts*, and *Venus Looking-Glaſs*, to ſtand the Winter, and bloſſom early in the Spring.

The firſt Week in this Month we may yet continue to plant *Evergreens*, ſuch as *Hollies*, *Yews*, &c. if they riſe with good Roots; but *Auguſt* is much the better Seaſon.

Yet tranſplant flowering Shrubs of all Sorts, and make Layers of them.

We may ſtill continue to tranſplant all Flowers which are fibrous-rooted, and have done blowing. Alſo cut down the Flower Stems of thoſe which are to remain growing, within three Inches of the Ground..

'Tis now a good Time to put into the Ground ſome *Anemony* and *Ranunculus* Roots, to blow early; let the Earth be a light natural Soil well ſifted for the *Anemonies*, but the *Ranunculus* ſhould have about half rotted Wood mixed with it.

About the End, put in ſome *Tulips*, eſpecially the Breeders, but give them not rich Ground; remembring always, 'tis Want of Nouriſhment is the Cauſe of Variegations in Plants; therefore my Advice is to plant all breeding *Tulips* in Rubbiſh of old Buildings one half, and the reſt natural Soil; or elſe ſet them about your pyramid *Yews*, which have ſtood long enough to impoveriſh the Earth.

Now put into the Ground your *Junquil* Roots, and let them ſtand two or three Years in the ſame Place.

Sow *Stock July-flowers*, that you may have a Supply in the Spring, if the Winter deſtroys your old Stocks. They love a dry Soil, mix'd with Lime Rubbiſh.

About the Middle of the Month, houſe your *Orange* Trees, *Geraniums*, *Ficoides*, *Sedums*, and others of the like tender Nature; but ſet them not in Order till *October*, that you may bring in your *Myrtles*, and ſuch more hardy Plants. Let the Windows of the Houſe remain open Night and Day.

We may yet ſow the Seeds of bulbous-rooted Plants, as *Tulips*, *Anemonies*, *Ranunculus*, bulbous *Iris*, *Martagons*, *Crocus*, and *Fritillaries*, in Pots or Caſes of freſh natural Earth well ſifted.

## *Flowers now blowing in the Green-Houſe and Flower-Garden.*

WE have now in Flower the common *White Jeſſamine*, the *Spaniſh White*, the *Indian Yellow*, and the *Braſil Jeſſamines*, *Geraniums* of ſeveral Sorts, various Kinds of *Ficoides*, *Leonurus*, *Paſſion-flowers*, ſome *Aloes*, *Thlapſi*, Semper-

[illegible], *Amomum Plinii*, *Guernſey Lilly*, [illegible], *Amaranths*, *Cyclamens*, *Colchicums*, [illegible], *Chriſanthemum*, *Sun-flowers*, *Hollyhocks*, *Tuberoſes*, *African* and *French Marygolds*, *Double Violets*, *Marvel* of *Peru*, *Female Balſams*, *Convolvulus*, *Naſturtium Indicum*, *Spiderwort*, *Scarlet Beans*, *Saffron Crocus*, *Poppies*, *Larkſpurs*, *Annual Stock*, *Venus Looking Glaſs*, *Candy Tufts*, *Stock July-flowers*, ſome *Carnations*, *Auriculas*, *Polyanthos*, *China Pinks*, *Myrtles*, *Monthly Roſes*, *Aſters* of ſeveral Kinds, *Pomegranates*, *Arbutus*, *Oleanders*, *Colutea*, *Capſicum Indicum*, and *Althea-Frutex*.

## *Works to be done in the Green-Houſe and Flower-Garden in* OCTOBER.

ABOUT the Beginning of this Month houſe your *Myrtles*, *Amomum Plinii*, *Marum Syriacum*, *Meleanthus*, and ſuch tender Greens as remain yet abroad; at the ſame Time giving them, and all other Houſe-Greens, a freſh Covering of Earth, without diſturbing their Roots: Tie up ſuch as grow diſorderly, and ſet them in their proper Places to ſtand the Winter, minding to ſet the moſt tender Plants, ſuch as *Aloes*, *Torch-Thiſtles*, *Melon-Thiſtles*, *Euphorbium*, &c. neareſt the Sun, and the others which are more hardy, towards the Back of the Houſe. After the Middle of the Month give no more Water to your tender ſucculent Plants, for they are ſubject to rot.

At the placing your Exoticks in the Houſe, obſerve, that only one third Part of the Floor be taken up with the Shelves for the Plants, ſo that there may be as much Vacancy left between them and the Windows, and the ſame Space between them and the Back of the Houſe; this Proportion being obſerved, the Houſe will not be ſo ſubject to Damps as if it was crouded, and there will be Air enough contain'd in it to nouriſh the Plants, if it was to be cloſely ſhut up a Month together.

When you water your houſed Plants, let it be in the Morning when the Sun ſhines upon them.

Keep open the Windows of the Houſe Day and Night till about the fifteenth, and after that Time open them only in the Day-time.

Now make an End of putting in your *Tulips*, and plant alſo ſome *Anemonies* and *Ranunculus*.

Continue ſtill to tranſplant and lay *Roſes* and ſuch like flowering Shrubs. Alſo plant the Cuttings of *Jeſſamine* and *Honeyſuckle* in ſhady Borders, well wrought with a Spade; and be ſure to bury at leaſt two Joints of each Cutting in the Ground.

We may now ſow the Berries of *Yew*, *Holly*, and ſuch Evergreens as have been prepared in Earth or Sand.

Set your Pots of *Carnations*, which are now blowing, into the Green-Houſe near the Door, where they may have the moſt Air. So alſo in the placing your Exotick Plants in the Houſe, let the moſt tender ſtand the moſt remote from the Door, the more hardy will bear the Air, eſpecially the *Ficoides*; but uſe none of them with too much Tenderneſs, for more Plants have been kill'd with too much Care, than have been preſerved.

## *vers now blowing in the Green-Houſe and Flower-Garden.*

'E have now flowering ſome *Oranges, Myrtles,*
*Geraniums, Amomum Plinii, Golden Apple,*
*s, Ficoides,* or *Fig Marygolds, Leonurus, Apo-*
*ms, Spaniſh Jeſſan e, Indian Yellow Jeſſa-*
*, Braſil Jeſſamine, mmon Jeſſamine, Thlap-*
*mpervivens, Pomeg nate, Arbutus, Anemo-*
*Single Polyanthos, Carnations, Stock July-*
*ers, Aſters, Antirrh m, Amaranths, Double*
*ts, Saffron-Crocus, lchicum, Monthly Roſes,*
ral Sorts of *Cyclam Paſſion-Trees* of ſeve-
ral Kinds, *African* an *rench Marygolds, Mar-*
*vel* of *Peru, Capſicum, ingle Wall-flowers,* and
ſome Bulbs from the *Cape of Good-Hope, Heart's-*
*Eaſe,* or *Viola Tricolor,* and the *Laurus-Tinus.*

## *Works to be done in the Green-Houſe and Flower-Garden in* NOVEMBER.

IN this Month, if the Weather is not very ſevere, open the Windows of your Green-Houſe a little, eſpecially if the Sun ſhines, and at the ſame Time give Water to ſuch Plants as require it. Let all the Water you uſe to the houſed Plants be as ſimple as poſſible; for Mixtures of Dungs, or other hot Ingredients, ſpoil your Plants.

If Froſts ſhould begin to ſet in, make a ſmall Fire of Charcoal, and when it burns clear, hang it up near the Windows; but do this only at

Night: Or, indeed, if you had the Conveniency of one of thoſe Chimnies improved by the Reverend and Learned Dr. *Deſaguliers*, it might be ſet to work upon this Occaſion; 'tis much the beſt Invention that I know of for warming a Green-Houſe.

In this Month lay up Heaps of Earth for your ſeveral Sorts of Flowers, and make the proper Mixtures for the ſeveral Exoticks, as I have directed in the former Months. Where the Ground is too ſtiff, and we deſire a natural Mixture, to bring it to the State of Loam, we muſt add to it a ſufficient Quantity of Drift or Sea-Sand.

Now lay down your *Auricula* Pots upon their Side, the Plants towards the Sun; for much Wet rots their Leaves, and Froſt is very injurious to them.

Shelter your young Seedling Bulbs from the Froſt; but give them Air every Day, or they will go off.

If the Weather be open, we may yet tranſplant *Roſes*, *Jeſſamine* and *Honeyſuckle*, *Syringa* and *Lylac*.

Now cut down the Stalks of Flowers that have done blowing, within three Inches of the Root; I mean ſuch as blow tall; for *Saffron*, *Cyclamen*, and *Colchicum*, muſt have their Herbage preſerv'd till it naturally decays.

Unnail your *Paſſion-Trees* from the Wall, and lay them upon the Ground, that when ſevere Froſts come, we may cover them with Straw.

Tie up all Trees and Shrubs to Stakes; for the Wind of this Seaſon breaks and deſtroys ſuch as are looſe and at liberty.

We may about the Beginning, plant *Hyacinths*, *Junquils*, and *Narciſſus*, *Polyanthos* in Pots, and plunge them into Hot-beds, to bloſſom about *Chriſtmas*.

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Flowers and Ornam
have now blowing, L
*Spaniſh White Jeſſamin*
*Candy-Tuft Tree*, *Gera*
*nations*, in the Houſe;
with its pretty ſcarlet
*Apples*, ſome *Paſſion-*
*Gentianella*, ſome *Polya*
and *Double Violets*.

## *Works to be done in Flower-Garden in*

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Bark, as the Air abroad at this Seaſon would do, if it was ſuffer'd to blow immediately upon them without Correction. Therefore, at the End of every Green-Houſe there ought to be an Antichamber, thro' which we ſhould paſs in the Winter, and not by the common Door or Windows in the Front: The Chamber which I now ſpeak of, is recruited with freſh Air from abroad every Time we go into it; and upon the opening the Door of that Room into the Green-Houſe, the Air there mixing with the other which has been pent up, impregnates it with new Parts, which contribute to the Vegetation or Growth of Plants. Now to explain what I mean by theſe Parts in the freſh Air, which are neceſſary to the Growth of Plants, I muſt have Recourſe to ſome Experiments which have been made upon Air, with reſpect to the Nouriſhment of Animals, who are in many Things analogous to Plants: For Example, a Man who goes into a Diving-Tub, where he is cloſely ſhut up from Air, except only what the Tub contains, will, after a little Space, find the Air grow hotter and hotter, 'till at length he is in Danger of being ſuffocated, and can have no Relief but by the Admiſſion of freſh Air: This ſhews us, that in Air there is ſome particular Quality which is neceſſary to preſerve Life in human Bodies, and when that Quality is exhauſted, the remaining Air becomes uſeleſs: So every one who knows but little of the Nature of Plants, has certainly taken Notice, that a Plant, which has for ſome Time been debarr'd from Air, turns ſickly, loſes its Verdure, and often languiſhes beyond Cure. But again, we have another Experiment tending to confirm the former, further explaining what that Quality is in the Air which is neceſſary to maintain human Life, which ſeems to be the ſame which is neceſſary to maintain Fire or Flame: A lighted Candle, for Example, being ſet under a Bell, cloſely fix'd upon a Table will burn perhaps a Minute or two, in proportion to the Quantity of Air pent up with the Candle in the Bell; but as ſoon as the Quality in that Air, which is neceſſary to feed the Flame, is exhauſted, the Candle goes out: This has been try'd too often to admit of any Diſpute that the Candle goes out by Chance; and we find that by letting into the Bell ſome freſh Air, a little before the Candle ſhould have gone out, it will ſtill continue burning; and then to ſhew that this Quality in the Air is the ſame which feeds the Life in Human Bodies, it was try'd, whether the Air returning from the Lungs, would not have the ſame Effect upon the Candle, as the external Air had before, but it had not; the Candle went out at its uſual Time. Thus, it ſeems, when we ſuck in Air for Breath, the Lungs take what is neceſſary for the Nouriſhment of our Bodies, and return back the reſt. But I believe I have ſaid enough to explain what I deſign'd, in preſcribing the letting in of freſh Air, at every Opportunity, into the Green-Houſe, and ſhall now proceed.

Give little Water to your Green-Houſe Plants, and be ſure to remember this Rule, that *Aloes*, *Euphorbiums*, *Indian Figs*, *Melon-Thiſtles*, *Torch-Thiſtles*, and *Sedums*, have none at all 'till *March* is almoſt out.

Provide Shelters for your tender Flowers, ſuch as choice *Anemonies* and *Ranunculus*, for now the great Froſts begin.

Be not over-haſty in warming your Green-Houſe with artificial Heats, but let in as much Sun as poſſible; rather ſtudy to keep the Froſt from your Plants, than make them grow; for untimely Shoots ſpoil Plants.

Pick off dead and rotten Leaves from your *Exotick Plants*, for they ſoon infect the whole.

## *Flowers now blowing in the Green-Houſe and Flower-Gardens.*

THE Leaves of the *Striped Lilly*, are now very beautiful, equal to any Flower. We have now in Flower the *Laurus-Tinus*, the *Glaſtenbury Thorn*, *Geraniums*, *Candy-Tuft Tree*, or *Thlapſi Sempervivens*, *Yellow Indian Jeſſamine*, *Spaniſh White Jeſſamine*, *Cyclamen*, *Ficoides*, *Aloes*, *Single Anemonies*, *Stock July-flowers*, *Single Wall-flowers*, *Antirrhinum*, *Common Primroſes*, *Polyanthos*; and in Fruit, the *Arbutus*, or *Strawberry-Tree*, *Amomum Plinii*, *Golden Apples*, *Oranges*, *Lemons*, *Citrons*, *Pyracantha*, and in our Hot-beds we have ſome *Hyacinths* and *Narciſſus*. We have now alſo in Flower the *Black Hellebore*, ſome *Snow-drops*, and the *Winter Aconite*.

# A
# DESCRIPTION
# OF A
# *GREEN-HOUSE*,
## CONTRIVED
## For the good keeping of Exotick Plants in the Winter; the Deſigns by Seignior Galilei of *Florence*.

BIBLIOTHECA BODLEIANA

AS I conceive the little Regard for *Exotick Plants* is chiefly owing to the Difficulties which Gentlemen have met with in preſerving them in the *Winter*, ſo I have endeavoured to lay down ſuch Rules for their Management, as may render the Manner of their Culture, eaſy and familiar to every Lover of thoſe Rarities; and when I conſider how much the Beauty and Advantage of the *Orangery* is owing to the good Condition of the *Conſervatory*, I am the leſs ſurprized to meet every

every Day with valuable Collections of Trees half poiſon'd with Charcoal, or pinch'd to Death with the Froſts; and all this is owing to the ill Contrivance of our *Engliſh* Green-Houſes, as I have mentioned in my *New Improvements*, Part III. 'Tis therefore I have conſulted with Seignier *Galilei*, a moſt ſkilful Architect, about compoſing ſuch a Green-Houſe as might be agreeable to the Rules of Architecture, and at the ſame Time be rightly adapted to the Welfare of Foreign *Plants*.

*Plate* II. is the Plan or Ground-Plat of a Green-Houſe which will be ſufficient, with the following Directions, to explain the IIId and IVth Plates.

A and B are two Rooms at the Ends of the Green-Houſe for the Uſe of the Gardener, or to be employ'd otherwiſe, as our Fancy directs. Theſe Rooms are Paſſages into the Green-Houſe in the *Winter*, that the cold Air may not directly be let in upon the *Plants*; *a b*, in thoſe Rooms are Places for Seeds, Inſtruments, Papers, Books, &c. and thoſe mark'd *c c* for Beds.

C in the half *Decagon* are Benches for the moſt tender *Plants*, ſuch as *Aloes*, &c. This Place is appointed for thoſe *Plants*, becauſe they may enjoy the Sun from its Riſing 'till it Sets; and the *Cupola*, being all Glaſs towards the *South*, will ſtill contribute to give them more of the Sun's Warmth; but the Pillars *d e f g*, which ſupport half the *Cupola*, may be left out or kept ſtanding at Pleaſure; they will be Ornaments when the *Plants* are in the Houſe, but are of no great Uſe in ſupporting the *Cupola*; the Roof alone may bear up that Part of it.

The Pillars *h i k l m n o p* are of the *Corinthian* Order, as aae the others, which ſupport the *Cupola*; they are ſo diſpoſed as to let the

as to be hung up into
are out of the Houſe,
open, like a *Portico* or

The Windows alſo o
to ſlide down when we
at the Top of the Hou
ſary.

The Saſh Frames like
may be made to run in
in the Theatre, ſo that
*Decagon* when we give
are more hardy.

D D are the Benches f
Houſe *Plants*, ſuch as *Or*
&c. They are ſo diſpoſe
about them, for Conveni

E is a Grotto and F
watering the *Plants* in t
ter in that Baſon will b
warm Air of the Houſe,
ing to the *Plants*; which
from without Doors wo
prove

the Contrivance of theſe Chimnies in the Reverend Dr. *Deſagulier*'s Book intituled, *Fires improved.*] A Green-Houſe contrived after this Manner, has little Need of Shutters to the Windows; for the Sun, and Heat from the Chimnies, will always keep the Air in the Houſe ſo warm, that the Froſts cannot do the *Plants* any Damage; but in the moſt rigorous Seaſon we may only cover thoſe Windows in the half *Cupola* with Straw-Mats; for the *Plants* there, are of the moſt tender Sorts. Thus I have endeavoured to explain the Uſe of this Green-Houſe, which is ſo ingeniouſly diſpoſed by Seignior *GALILEI*: See the *Section* and the *Upright* of it, *Plates* III. and IV.

STA-

# STATUTES

## For Preſervation of Timber, Underwood, Fruit-Trees, Hedges, &c. including the Act of the 6th of King GEORGE I.

TO render this Treatiſe of greater Uſe to the Publick, and that the Reader may be acquainted with the Laws for Preſerving, as well as the Methods of Propagation of Timber Trees, Fruit-Trees, *&c.* I ſhall here inſert an Account of the ſeveral Acts of Parliament on this Head, from the earlieſt Date to this Time.

The firſt Law I find in our Statute Books is 35 *Hen.* VIII. which enacts, That in every ſeveral Wood, call'd Coppice or Underwood, that ſhall be fell'd at twenty-four Years Growth, or under, there ſhall be left twelve Standils of Oak unfell'd in every Acre: And in Caſe there ſhall not be ſo many Oaks, the Number is to be ſupplied with Elm, Aſh, Beech, *&c.* Which Standils ſhall not be cut down until they are ten Inches Square within three Foot of the Ground, on Pain that every Owner of ſuch Woods ſhall forfeit for every Standil not ſo left, or left and afterwards cut down under Size, 3 *s.* 4 *d.* to be divided between the King and Proſecutor.

And if Coppice Wood be fell'd above twenty-four Years Growth, and there ſhall not be ſo many Standils left, the Forfeiture for each Standil not left, is made double, *viz.* 6 *s.* 8. *d.* And the Standils left muſt not be cut down (unleſs by the Owner of the Soil for Building, Repairs, Poſts, Rails, *&c.*) before they are of ſufficient Growth, under the like Penalty of 6 *s.* 8 *d.* each.

Underwoods felled at fourteen Years Growth, or under, ſhall, during four Years next after the twentieth of *April* enſuing their felling, be preſerved from Deſtruction of Cattle, on Pain of forfeiting for every Rod unfenc'd, 3 *s.* 4 *d. per* Month: And Underwoods above fourteen Years Growth, and under twenty-four, are to be well fenced and preſerved for the Term of ſix Years after felling, under the like Penalty. If any Beaſts are ſuffered to come into a Lords fourth Part of Wood, wherein others have Common with him, and the ſame be ſet out within ſeven Years after the felling, the Owner of ſuch Cattle ſhall forfeit for every ſuch Beaſt 4 *s.*

Underwoods in a Park ſhall be preſerved by fencing only four Years after felling. And if any Perſon ſhall break or deſtroy any Fence or Hedge made for the ſaving of any Woods or Underwoods, he is liable to the Penalty of 10 *s.* And Swine, about ten Weeks old, are not to be permitted to run in Wood Grounds, un-ring'd, on Pain of forfeiting 4 *d.* a-piece. Yearling Colts or Calves may be put into ſuch Woods within two Years after felling thereof.

By the 13 *Eliz. c.* 25. all Woods or Coppices intended by Stat. 35 *Hen.* VIII. to be incloſed, and the Springs thereof preſerved, ſhall be ſo ſaved for the Space of two Years more than by the ſaid Act is limited, according to the Age of the Woods felled, upon ſuch Pains and Penalties as in the ſaid Act are contained: And no Perſon ſhall put any Cattle into ſuch Coppice-Woods from the Time of the Fall, unto the End of five Years; nor from the End of five Years, any Cattle but Calves and yearling Colts only, until the End of ſix Years, if the Wood was under fourteen Years Growth; or 'till the End of eight Years, if it was above fourteen Years Growth at the laſt Fall.

The 23$^{d}$ *Eliz.* enacts, That none ſhall convert into Coal or other Fuel, for the making of Iron, *&c.* any Wood or Underwood, growing within the Extent of twenty-two Miles of *London*, or of the River *Thames* from *Dorcheſter* in the County of *Oxford* downwards, or within four Miles of the Foot of the Downs, between *Arundel* and *Pemſey* in the County of *Suſſex*, or of *Winchelſea* or *Rye*, or within 2 Miles of *Pemſey*, or 3 Miles of *Haſtings*, on pain of forfeiting for every Load 40 *s.*

By 27 *Eliz.* none are to convert to Coal or other Fuel, for the making of Iron, *&c.* any ſound Timber-Tree of Oak, Aſh, or Elm, which ſhall bear a Foot ſquare in any Part, in the Counties of *Suſſex*, *Surrey*, *Kent*, &c. under the Penalty of 40 *s.* for every Tree, to be divided between the King and Proſecutor. The Penalty is the ſame (by 1 *Eliz.*) for Timber-Trees thus converted at any Place, within fourteen Miles of the Sea, or of the *Thames*, *Severn*, *Wye*, *Humber*, *Dee*, *Tine*, *Tees*, *Trent*, or other navigable Rivers.

But the Lops of Timber-Trees, may be converted to Coal, for the Purpoſes aforeſaid, within the Wilds of *Suſſex*, *Surrey*, and *Kent*; ſo as it be not within eighteen Miles of *London*, eight Miles of *Thames*, four Miles of *Rye* or *Winchelſea*, three Miles of *Haſtings*, *&c.*

The next Statute is 43 *Eliz.* relating to robbing of Orchards, Hedge-breaking, *&c.* By this Statute, if any Perſon ſhall rob any Orchard or Garden, dig up or take away any Fruit-Trees, break any Hedges, Pales, Fences, *&c.* cut or ſpoil any Woods or Underwoods, *&c.* he ſhall, for the firſt Offence, pay to the Party grieved, ſuch Damages as a Juſtice of Peace ſhall appoint: And if the Party be not of Ability to pay the Damages appointed, he ſhall be puniſhed by Whipping.

By 15 *Car.* II. a Conſtable or any other may apprehend Perſons ſuſpected of ſtealing of Wood, Underwood, Poles, or young Trees, Bark of Trees, Gates, Stiles, Poſts, Pales, Rails, Hedge-wood, Broom, *&c.* And by Warrant from a Juſtice of Peace, ſearch their Houſes; and if they find any of thoſe Things, they are to carry the Perſon, on whom found, before a Juſtice; and if he cannot give a good Account how he came by the ſame, or in a convenient Time produce the Perſon of whom bought, or ſome Witneſs to prove the Sale on Oath, he ſhall make ſuch Recompenſe as the Juſtice ſhall appoint; and pay a Sum not exceeding 10 *s.* for the Uſe of the Poor where the Offence was committed; and on Default thereof, he is to be ſent to the Houſe of Correction for any Time not exceeding a Month, or be whipped; for the ſecond Offence to be committed to the Houſe of Correction for a Month, and be kept to hard Labour; and on committing a third Offence, to be adjudged an incorrigible Rogue.

If any Perſon ſhall be convicted of buying ſtolen Wood, one Juſtice may order ſuch Buyer to pay treble Value to him from whom taken, and in Default thereof, commit the Offender for a Month. But Proſecutions on this Act muſt be commenced within ſix Weeks after the Offence committed.

In the firſt Year of King *George* I. an Act paſſed for encouraging Plantations of Timber-Trees, Fruit-Trees, and other Trees for Ornament, Shelter or Profit, and for the better Preſervation of the ſame, *&c.* whereby it is ordained, That if any Perſon or Perſons ſhall maliciouſly cut or ſpoil any Timber-Trees, Fruit-Trees, *&c.* they are to be committed to the Houſe of Correction for three Months, and be whipped once a Month, in the Market-Town where the Houſe of Correction ſtands, or in the next Town, *&c.*

And Perſons maliciouſly ſetting on Fire, Burning, or cauſing to be burnt, any Wood, Underwood, *&c.* ſhall be guilty of Felony.

By the 6th of King *George* I. after reciting, that divers diſorderly Perſons in a private Manner enter the Woods, Coppices, Plantations, Parks, Chaſes, *&c.* of Lords of Manors, *&c.* and make great Deſtruction, by cutting down, breaking, taking, and carrying away Wood, Fruit-Trees, Poles, Springs, Thorns, Quickſet, *&c.* And by throwing down and deſtroying Hedges, Fences, Walls, *&c.* It is enacted, That if any Perſon, either by Day or Night, ſhall cut, take, deſtroy, bark, pluck up, deface, ſpoil or carry away any Wood Springs, or Springs of Wood, Trees, Poles, Wood, Tops of Trees, Underwoods, or Coppice Wood, Thorns or Quickſets, without the Conſent of the Owner, or ſhall break open, throw down or deſtroy any Hedges, Gates, Stiles, Walls, Fences, Banks, Ditches, or other Incloſures of Woods, Wood Grounds, Parks, Coppices, Timber, Fruit-Trees, *&c.* the Owners or Proprietors of the ſame, that ſhall be damaged thereby ſhall receive ſuch Satisfaction of the Inhabitants of the Pariſhes joining on ſuch Wood Grounds,

*&c.* and recover ſuch Damages againſt ſuch Pariſhes, as for Dikes and Hedges overthrown, by Stat. 13 *Edw.* I. relating to *Approvement:* Unleſs the Party offending be by ſuch Pariſh, *&c.* convicted of the Offence within ſix Months.

Two Juſtices of the Peace, or the Juſtices in Seſſions, when any of the Offences above mentioned are committed, upon Complaint made by any Inhabitant of the Pariſh or Place where done, or of the Owners of the Trees, Wood, Wood Grounds, *&c.* are to cauſe Offenders to be apprehended; and inflict the Penalties and Puniſhments in the Act 1 *George* I.

The Statute of *Edw.* I. to which this Act refers, is in Subſtance as follows: **If any Perſon do make a Ditch or a Hedge for that Purpoſe (upon juſt Title of Approvement) which afterwards is thrown down by ſome who cannot be diſcovered by Verdict of the Aſſize or Jury, and the Towns adjoining will not Indict ſuch as are guilty of the Fact; in ſuch Caſe the ſaid Towns ſhall be Diſtrained to repair ſuch Ditch or Hedge at their own Coſts, and ſhall alſo yield Damages.**

# *Herefordſhire* ORCHARDS,

## A

# PATTERN
# FOR ALL
# ENGLAND.

Written in an Epiſtolary ADDRESS to

## *Samuel Hartlib*, Eſq;

By *I. B.*

# AN EPISTOLARY ADDRESS TO *Samuel Hartlib*, Eſq;

*SIR*,

YOUR induſtrious Endeavours for the Benefit of all Men, and particularly for the Good of this Nation, hath well deſerved the grateful-Acknowledgment of all good Men, and of myſelf in ſpecial; for that in my rural Retirement, I have received ſome Profit, and very much innocent and refreſhing Delights in the Peruſal of thoſe Treatiſes, which are, by your diligent Hand, communicated to the Publick.

My Education was amongſt Scholars in Academies, where I ſpent many Years in converſing with Variety of Books only. A little before our Wars began, I ſpent two Summers in travelling towards the *South*, with Purpoſe to learn to know Men and foreign Manners. Since my Return, I have been conſtantly employed in a weighty Office, by which I am not diſengaged from the Care of our Publick Welfare in the Peace and Proſperity of this Nation; but obliged to be the more ſollicitous and tender in preſerving it, and promoting it. Wherefore, taking Notice that this County is reputed the *Orchard* of *England*, and (in the Generality of good Huſbandry) excelleth many other Places; I offer it (as my Duty) to give you ſome plain and unpoliſhed Account of our *Agriculture* in *Herefordſhire*; which I do the more willingly undertake, for that I do not yet know of any other Addreſs is made unto you from this Country. Here I obſerve the wiſeſt and beſt of our Gentry to be very careful in ſetting forward ſuch Kind of Huſbandry, as beſt agrees with the Nature of the Soil where he inhabiteth. From the greateſt Perſons to the pooreſt Cottager, all Habitations are encompaſſed with Orchards and Gardens; and in moſt Places our Hedges are inriched with Rows of Fruit-Trees, Pears, or Apples, Gennet-Moyles, or Crab-Trees. Of theſe, the Pears make a weak Drink fit for our *Hines*, and is generally refuſed by our Gentry, as breeding Wind in the Stomach; yet this Drink ('till the Heat of Summer hath caught it) is moſt pleaſing to the female Palate, having a Reliſh of weak Wine mixed with Sugar. If mingled with ſome harſh Kind of Apples, it makes a happy Mixture; and our obſervant Houſe-keepers know how to mix them to the beſt Advantage. Some Pears are apt to incline the Drink to be roapy, and they are known by giving a wheyiſh Colour to the Liquor. I know a good Huſband that cuts down and deſtroys ſuch Pear-Trees from his Ground, calling them the worſt of Weeds. For others are ſo nice as to refuſe the Drink, and Women love it beſt, as ſweeteſt, 'till it be roapy. Moſt other Kinds of Perry are of a more wateriſh Colour, than Apple-Cyder, and more luſcious. The white Horſe-Pear yields a Juice ſomewhat near to the Quality of Cyder; and the Neighbourhood of *Boſbury* is famous for a peculiar Perry, which hath many of the maſculine Qualities of Cyder. It is quick, ſtrong and heady, high coloured, and retaineth a good Vigour two or three Summers; yea, in great Veſſels and good Cellars many Years, before it declineth. The Fruit is ſo hard and coarſe, that a Man cannot endure to bite a Morſel of it, and a Pig will refrain it. This *Boſbury* Pear is there called the *Bareland* Pear, and as the Liquor approacheth to Apple-Cyder in Colour, Strength, and excelleth in Durance; ſo the Bloom cometh forth of a damaſk Roſe Colour, like Apples, not like other Pears. Our *Gennet Moyles* are commonly found in Hedges, or in our worſt Soil, moſt commonly in *Irchenfield*, or towards *Wales*; where the Land is ſomewhat dry and ſhallow. This Fruit is nice, and apt to be diſcouraged by Blaſts, and we do ordinarily expect a failing of them every other Year, eſpecially in dry Soil; and the Reaſon is apparent and neceſſary. But this Fruit makes the beſt Cyder, in my Judgment, and ſuch as I do prefer before the much commended Redſtreak'd. For this *Gennet Moyle*, if it be ſuffered to ripen upon the Tree, not to be mellow, but to be yellowiſh and fragrant, and then to be hoarded in Heaps under Trees, a Fortnight or three Weeks before you grind them; it is (at a Diſtance) the moſt fragrant of all Cyder-Fruit, and gives the Liquor a moſt delicate Perfume. So for Tarts and Pyes, it is much commended. The Crab is commonly ground for Verjuice, and ſometimes hoarded 'till near *December*, and then mingled with Cyder, or Waſhings of Cyder, to

Crab, thus hoarded; it being
much Wine, of a very pleaſin
Experiment is not yet know
Country-men, it being reſerve
Myſtery. I have ſometimes
Pippins only, well ripened, n
nor over-ripen'd, and ſomewh
find it to be a very pleaſant I
ceive it to be the moſt wholeſo
rative of all Sorts of Cyder.

I need not tell you how al
generally all our Highways (
thick ſet with Rows of Vi
Spring-time ſweetned, and
bloomed Trees, which contin
Varieties of Ornament, 'till (
tumn) they fill our Garners
and our Cellars with rich and w
Cottagers, yea very few of
men, do taſte any other Dri
except at ſome ſpecial Feſtiva
in the Year, and that for Varie
Choice.

Orchards being the Pride

which our County hath been always famous (and for that they fence our Habitations and Walks from the Stroke of Winds and Storms in the Winter, and afford us Shelter and Shade in the Heat of Summer; and (if I may acknowledge grateful Trifles) for that they harbour a conſtant Aviary of ſweet Singers, which are here retained without the Charge or Violence of the *Italian* Wires.

My firſt Obſervation is this; I conceive that if other Countries would ſubmit to the ſame Patience and Induſtry, as is uſual amongſt us, they might partake of a great Meaſure (at leaſt) of the ſame Bleſſings. As we ſee in our Borderers of *Shropſhire*, *Worceſterſhire*, and *Glouceſterſhire*, and alſo in *Somerſetſhire*; and much more in *Kent* and *Eſſex*, &c. My Reaſon I take from the wonderful Difference of Soils where we abound with rich Orchards. About *Bromyard*, a cold Air, and a ſhallow barren Soil, yet Store of Orchards of divers Kinds of ſpicey and ſavory Apples. About *Roſſe* and *Weobley*, and towards the *Hay*, a ſhallow, hot, ſandy or ſtony Rye-Land, and expoſed to a changeable Air, from the Diſguſts of the Black Mountain; yet here, and all over *Irchenfield*, and alſo about *Lemſter*, both towards *Keinton*, and towards *Fayremile*, (which makes a third Difference of ſhallow and ſtarving Land) in all theſe barren Provinces, as good Store of undeceiving Orchards, as in the richeſt Vale in the County, even by *Frome* Banks. Only, as I fore-noted, where the dryeſt Fruit-Trees are planted in a very hot, ſhallow, and dry Soil, there we muſt be content with a full and certain Bleſſing every ſecond Year. This being alſo allowed, that ſome Soil and ſome Air is more agreeable for ſome Kind of Fruit, than for other; as for Example, *Worceſterſhire* is more proper for Pears and Cherries, than *Herefordſhire*, and *Herefordſhire* more proper for *Apples*. The Reaſon of the Difference may, in Part, appear by this following Illuſtration. Where the Turf is very ſhallow, the rough ſtarvy Ground (which in this Country we wrongfully call *Marle*) hinders the tender Root of the Apple-Tree from deſcending deep enough for due Nouriſhment, and fit Shelter. There is (in the Ground which we eſteem the moſt barren) the Root of the Pear-Tree, having a more piercing Vigour, breaks his Way through this coarſe *Marle*, as it will alſo cleave through ſome Veins of Rocks and Stones; and under this ſtarvy Ground, it finds a more congenial and richer Nouriſhment; as appears by the Store of Fruit, fair and juicy, and alſo by the Rind of the Tree, ſmooth, bright-coloured, and free from Moſs. This we alſo note, That in a deep Soil, that is moſt kind for Apples, if the Root of a Pear-Tree deſcends deep into a ſoft clay Ground, the Tree ſpends all his Strength in growing downwards, and becomes leſs ſpacious, and leſs beautiful in the Head, and leſs fruitful. And where ſome Pears find great Difference of Soil, whether grafted or planted by the Stock, there it differeth ſometimes in Bulk, and oft-times in other Qualities very much. Which ſeemeth to me to explain, why there are ſuch different Kinds of Pears in every Country; their Shape and their Nature, and therefore alſo their Names being changed ſo often, and ſo eaſily.

Alſo I have frequently noted, that the richeſt Cyder, and the beſt taſted Apples for the Table, do grow in the Soil that is leſs deep and leſs commended for other Uſes, as in a high Ground, or dry Land. And you ſhall find the better taſted Fruit to be more wretched or wrinkled, or ſpotted with Warts, Moles, or Freckles, or of a more ruſſet or yellow Colour. The other Apple that comes from the richer and lower Ground, is more pallid, more plump, but more wateriſh and inſipid. I conclude this Obſervation with this Direction, That ſince no kind of Soil ſhould wholly diſcourage us, and yet much Regard muſt be had of fitting the Fruit to the Soil; therefore we muſt employ our firſt Care in the Plantation of a Nurſery, where our Experiences may daily increaſe, and the Plants alſo be educated, prepared, and fitted for the neighbouring Soil. For what *Columella* ſaith of Vines, I may as truly ſay of Fruit-Trees; *Quod ex longinquo petitur, parum familiaritur noſtro ſolo venit, propter quod difficilius convaleſcit alienum exteræ regionis. Optimum eſt ergo eodem agro quo vitem diſpoſiturus es, vel certe vicino, facere ſeminarium; idque multum refert loci natura, &c.* de Arbor. cap. 1.

My ſecond Obſervation is intended to encourage the Plantation of a Nurſery by directing the ſure Way how to fit the Soil with the greateſt Variety of Fruits, and alſo to obtain the ſpeedieſt Reward, together with a yearly Delight in Novelties, and a like Growth in Experiences.

But becauſe I muſt now embark into ſome Paradoxes, which will not eaſily obtain Belief, and leaſt of all amongſt our own Countrymen here in *Herefordſhire*, for ſome Reaſons which hereafter will occur, I will make my Entrance with a plain and true Story.

Some Years ago I read a ſmall Treatiſe of Orchards and Gardens written by *William Lawſon*, a North Countryman, printed 1626. In it I found many Aſſertions which ſeemed to me ſo ſtrange, ſo contrary to our general Opinion, ſo diſcordant

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many Particulars, ſo

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2. That the Kerne
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*pag.* 18.

3. That by the Leave
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4. That Apple-Trees
out grafting or removi
ſand Years.

Kernels will degenerate to Crabs, at leaſt if taken from Apples planted on a Crab Stock; and that Crab-Kernels are better for a Plantation, than any Apple-Kernels.

3. The third Note was wholly unknown and unobſerv'd in our Country.

4. The fourth, like an unreaſonable Fancy.

5. The fifth, as refuted in all our Orchards every where.

Notwithſtanding theſe Oppoſitions, I ſtill retained my good Opinion of the Man's Honeſty and Experience. Therefore I reſolved to make exact Trial with Patience. I digg'd Holes of three Foot Breadth in a Parcel of ordinary Clay-Ground. [Note, That the whole Piece of Clay-Ground was turned ſomewhat deep with the Spade before, that the Settlings might gather Root as well in that vulgar Ground, as alſo in the finer Mould.] I acquired Slips of ſeveral Trees that grew without Grafting, and bore ſeveral Fruits of their natural Kind: Theſe I placed each Kind round about the Verges of the ſeveral Holes. By diligent Enquiry the firſt Spring, I found fourteen ſeveral Sorts of theſe natural Apples, the Fruit much differing in Taſte, Shape, and Colour; ſome only green and ſoweriſh, ſome red-ſtreaked, ſome party-colour'd, and very pleaſant, ſome Table-Fruit in Summer, ſome Winter Fruit, ſome Cyder Fruit. Of all theſe the *Kentiſh Codling* was by odds the worſt; not many better than the *French Cornel.* Having placed theſe Slips in the Border of the Hole at a Foot Diſtance, I filled up the Hole with a fine Kind of Garden Mould, carried thither in Barrows. This I raiſed not in Tumps, for I foreſaw the Inconvenience, that it would be a Harbour for Ants and Piſmires. I kept it alſo at an equal

Level, that the Rain might not lodge there, and corrupt the young Roots. In the midſt of this fine Mould, in the moſt temperate Weather, I did Monthly, from Autumn to the next Spring, ſet Kernels of the fineſt Sort of Apples, with delineating in a Sciograph the ſeveral Kinds in ſeveral Places. I now find that the Kernels of Apples grafted on Crab-Stocks, prove not all Crabs, nor (as I gueſs) altogether of the Kind of that Apple whence the Kernel was taken.

*2dly*, That, as the Mould is finer where they firſt grow, ſo the Fruit ſeemeth more civil; and in coarſe Ground they degenerate towards the Crab. Our Neighbours, for a Nurſury, ſow the Droſs or Muſt (as we call it) of Apples ground in a Cyder Mill. But I have noted, the faireſt Kernels to be bruiſed in the Mill, the Remainder being ſmall, and ſown in coarſe Land, become a Kind of Crabs: And that the Kernels of natural Apples do very much propend to the Kind of which they are deſcended.

This was neglected; and therefore unknown to our Neighbours, who had no need of this Curioſity, as being ſo addicted to grafting, that they take not Notice of any natural Apple, except the *Gennet Moyle*, the *Kydoddin*, the *Sweeting*, and the *French Cornel*; which are found in all Places. 'Tis ſure that Kernels of the ſame Apples; in a far differing Soil, do produce a different Apple; but (as I ſaid) ſtill with ſome Inclination to the Original, if it be the Kernel of an ungrafted Apple. And this may advertiſe the beſt Seaſon of deſigning Variety; namely, in Application of choice Compoſt to the very Kernel, *Gabr. Plat* preſcribeth *Exp.* 14. *pag.* 210. of the Additions to the excellent Legacy. All other Stories, of pouring

Liquors into the Bark, or Bulk of the Tree, are effete and idle Fancies, for nine Days Wonder.

*3dly*, I find the Truth, and that much more might be added to *Lawſon*'s Rules, of diſtinguiſhing the Hopefulneſs of the Fruit by the firſt Leaves of the yearling Plant: For a ſhort and dark green Leaf prognoſticateth a crabbed Fruit: With a larger Leaf, and thick, but alſo dark green, I have found a good Winter Apple, but the Stock hardy, to endure a ſtiff Clay-Ground: A fady willowiſh broad Leaf noteth a flat inſipid Apple, as the *Kentiſh Codling*, which holds out well againſt Blaſts. A paler Green, as the *Poppinjay*, or *Barbary Leaf*, eſpecially if the Leaf be limber alſo, noteth a delicate Fruit; and the broader the Leaf, the fairer that Fruit; A wrinkled Leaf, neither very dark, nor very light, proves red-ſtreak'd, Crab Stocks have reddiſh Tops. More Particulars will occur by ordinary Obſervation.

*4thly*, For the incredible Durance of Apple-Trees, to a thouſand Years, I have upon much Experience, and many Reaſons, much abated the Preſumption of my Cenſure. 'Tis certainly true (as *Gabriel Plat* in the aforeſaid Place noteth) that if a Man aim at his preſent Profit, then grafting is his Way; but if he aim at the Profit of his Poſterity, then it is beſt not to graft at all. This I add, that moſt ungrafted Apples are apt, by the Over-weight of their Fruit, to lean towards the Ground; and I have ſeen many of them quelled quite to the Ground; where they do renew their Strength, and get up again into many Trunks, in a continued Order, anſwerable to the old Fable of the Giant *Antæus*. Every aſpiring Trunk of ſome of theſe natural Apples, is much more laſting than any grafted Fruit-

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tumnal Rains, have ſoftened the Earth at the Roots, that the Roots be not bruiſed or wounded in the Removal; and then the Tree ſhould keep the ſame Poſition towards the Heavens; the Roots laid alſo in the ſame Poſture, the ſmaller Fibres, or bearded Roots, rather cut at the Ends than crumpled up; and the Earth in which the Stock is laid, ſomewhat of the ſame Kind, but bettered and mellowed, not with undigeſted Muck, but with fine Mould, and Shovelings of the Fold. If the Roots are cut or bruiſed, to the ſame Proportion the Branches muſt be lopped. In a grafted Plant every Bough ſhould be lopped, at the very Tops, in Apples and Pears; not in Cherries and Plums. In a natural Plant the Boughs ſhould not at all be lopped, but ſome taken off cloſe to the Trunk, that the Root at firſt Replantation be not engaged to maintain too many Suckers: And this muſt be done with ſuch Diſcretion, that the Top Branches be not too cloſe together; for the natural Plant is apt to grow ſpiry, and thereby fails of Fruitfulneſs. Therefore let the reſerved Branches be divided at a convenient Roundneſs. The Branches that are cut off, may be ſet, and will grow, but ſlowly. If the Top prove ſpiry, or the Fruit unkind, then the due Remedy muſt be in grafting.

Neither is grafting to be uſed only as a Remedy; for it doth moſt certainly improve the Kind of the Fruit; inſomuch, that a Graft of the ſame Fruit doth meliorate the Fruit, as is lately much obſerved by our *Welſh* Neighbours, who do graft the Gennet-Moyle upon the ſame Stock, and thereby obtain a larger Apple, more juicy, and better for all Uſes: And ſome triplicate their Graftings (for a Curioſity) upon the ſame Account.

And it is noted amongſt us, that a *Pearmain*, or any other pleaſant Fruit, either for Cyder, or for the Table, is much ſweeter, if grafted upon the Stock of a *Gennet-Moyle*, or *Kydoddin*, than if grafted on a Crab-Stock; though much leſs laſting upon the Stock of the *Gennet-Moyle*: The *Gennet-Moyle* being alſo leſs laſting, eſpecially amongſt us, where they are generally planted of large Settlings, which muſt needs wound them in their very Beginnings, and therefore hinder their Duration.

Alſo Grafting doth much precipitate, or at leaſt expedite the Reward, eſpecially if the Graft be taken from a Branch that hath ſome Years conſtantly borne ſound Fruit plentifully. Truſt not to one Year's Trial. *Poteſt enim vel anni proventu, vel aliis de cauſis, etiam naturaliter infæcunda ſemel exuberare: Sed ubi plurimis velut emeritiſa non eum ſtipendiis fides ſurculo conſtitit, nihil dubitandum eſt de fæcunditate: nec tamen ultra quadriennium talis extenditur inquiſitio*, ſaith *Columella* in a like Caſe; *lib.* 3. *c.* 6.

1. Thus we ſee how to haſten the Reward, both by Grafting, and in the Choice of the Graft.

2. And how to ſweeten the Fruit and better it, both by the Choice of a pleaſing Stock, and alſo of a kind Graft.

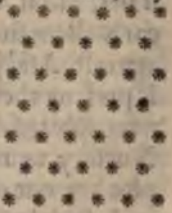
3. And how to multiply Variety in the Diverſity of Compoſt, eſpecially at the firſt Plantation of the Kernel; and I add, with frequent Application of pleaſant Infuſions and Liquids, as in which Aniſe-Seeds, Fennel, Roſemary, or other agreeable Aromaticks have been ſteeped:

Yet beware of giving too much Juice to a young Plant; for that may drown it, or make it leſs guſtful: And I never ſaw an Orchard prove, where the Ground was wetted with a Water-Gall, or where the Moiſture did for ſome Time lye there, and could not be drained away. Yet near a running Sink of ſoiled Water, I have ſeen the approaching Trees never fail of their Fruit.

4. And hence we ſee how to plant an Orchard that may probably remain to the World's End. And in this Point I have inſinuated ſome Part of my Paradoxes, by the Way of a Story, and in Pretence of defending another againſt the Opinion and common Practice of mine own Countrymen. Mr. *Lawſon*'s Book I have not now at Hand, neither can I record his Judgment verbally, but I think I have ſtuck cloſe to his Senſe.

He addeth, that the Fruit of the natural Plant doth grow better and pleaſanter by Time; as better at thirty Year's Growth than at twenty Year's Growth. This I know not. See *Chap.* vii. *pag.* 18. 19.

Alſo he requireth much more Diſtance of the Trees than we obſerve, as ſixty Foot at leaſt. Our common Orchards are at twenty Foot Diſtance; our beſt Orchards at thirty at leaſt, by alternative Rows *per Quincuncem* (as in the Margin.) In large Crofts of Arable, reſerved for conſtant Tillage, which is a neceſſary Help to Fruit-Trees, our beſt Huſbands graft high, and prefer *Lawſon*'s utmoſt Diſtance, even ſixty Yards, that the Teams may not annoy the Trees; and then



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three the better for it. To ſome a ſmall Slice of the Bark is as good. Before *December*, whilſt the Spray grows on the Tree, by the Bluntneſs of the Bud you may diſcover what Branch will bear Fruit the next Summer immediately following, if you cut off the Branch, and ſet it before the Buds be ſprouted too far forward, (as you may in *February*, or the Beginning of *March.*) This, with ſome, will paſs as a Prophecy. A ſore Blaſt, or *May* Froſts may deceive you. Of theſe natural Apples there are not paſt ſix or ſeven Kinds diſtinguiſhed by proper Names amongſt us. I conceive they can never be diſtinguiſhed, for that every Individual always aſſumes a peculiar Nature from the infinite Variety of Compoſt. In this Nurſery, 'tis the ſame Pains, and no Charge, to try the Seeds of *Firrs*, *Pines*, *Cypreſs*, *Pitch*, *&c.* which prove better for Replantation than in Hot-beds.

Of the Art of Grafting, either with the Cions, Bud, or Leaf, I ſhall ſay nothing, becauſe every Village amongſt us yieldeth Store of Artiſts; and many Books ſhew the Rules; but in theſe Things an Artiſt can teach more in a Day, than a Book in a Month.

One Reaſon why Fruit doth ſo abound in this Country, is, for that no Man hath of late Years built him a Houſe, but with ſpecial Regard to the Proximity of ſome Ground fit for an Orchard, which ſhould be of ſome Depth, as is commonly towards the Foot of a deſcending Ground, and frequently with a Proclivity towards the South; and the Land not too friable or hollow, but ſomewhat tough, binding, and tenacious, leſt the Winds root up the Stocks. And many Times Servants, when they betake to Marriage, ſeek out an Acre or two of Ground, which they find fit for Orchards; for this they give a Fine, or double Value for Years or Lives; and thereon they build a Cottage, and plant an Orchard; which is all the Wealth they have for themſelves, and their Poſterity.

For Gardens, we have little Encouragement to deſign more than is for the neceſſary Uſe of our own Families, except our River *Wye* may be made navigable for Tranſportation. And by Defect of Tranſportation, our Store of Cyder is become a Snare to many, who turn God's Bleſſings into Wantonneſs and Drunkenneſs: The Credit of Cyder being of few late Years much advanced in the Eſtimation of our beſt Gentry, who have ſought out the right Method of ripening and hoarding the choiceſt Fruits, and of finding the right Seaſon of drawing it, and ſome alſo of bottling it. But I am confident that much more may be added to the Perfection of it, when they ſhall alſo apply to it the due Subtilties of the myſterious Art of Fermentation.

I found it much amended, by putting pure Cyder upon the freſh Lees of a But of Sack newly drawn.

In Vines our Gentry have lately contended in a profitable Ambition to excel each other: So that the white *Muſcadine* is vulgar, the *purple* and *black Grape* frequent, the *Parſly Grape* and *Frontiniac* in many Hands.

Wallnuts belong to our Highway Sides, and are fitteſt for dry and ſtony Grounds. I find them for the dryeſt Ground of the Nurſery a never-failing Companion. In *Columella* we may find many excellent Rules how to aſcertain and haſten their Growth, and to mend their Quality.

The large Cheſnut being ſuch a maſculine Food for luſty Ruſticks, and ſo much uſed at the beſt Tables in *France*, and ſo ſavoury in the Condiment of our ſtrongeſt Cyder with Salt, I much blame our Countrymen, that we have no more Uſe of a Food that would ſoon become cheap, common, and laſting.

All theſe Nuts and Filberts do accelerate Growth, as I have proved, by the Rules of *Columella: In aqua mulſa, nec ninius dulci macerato, ita jucundioris ſaporis fructum cum adoleverit, præbebit, & interim melius & celerius frondebit, lib.* 5. *cap.* 10. And again, *de arb.* 22. I cannot tell whether it ſhould not be read, *nec nimis dulci*; but I try'd it in Milk, and alſo in ſtale Urine ſteep'd in Sheeps Dung, with good Succeſs. He adds, for an Improvement, *Et in medulla ferulæ ſine putamine nucem Græcam vel avellanam abſcondito, & ita adobruito.* A *worthy Perſon* try'd the Kernels of Cherry-ſtones and Plumbſtones, having firſt broken and caſt away the Shells, and ſetting them in Summer Time, as ſoon as they were ripe; and he aſſureth, that they got a Year's Advantage in Celerity.

I do much wonder that ſuch a ſingular honeſt Man as *Gabriel Plat* ſhould write, that it is found by Experience, that a Cheſnut in ten or twelve Years will grow into a fair Tree, able to be the Maſter Poſt of a fair Building. And the like of the Wallnut, *Exp.* 13. *pag.* 269. *Addit.* to the *Legacy*.

I am at the like Wonder at honeſt Capt. *Blithe*'s Precedent of ſmall quickſet Oaks, that at eleven Years Growth made Spars and ſmall Building-Timber, *Chap.* 25. *pag.* 158. *Edit.* 1652.

Our Elm is of ſpeedieſt Growth, all Timber, always ſhredded to be the talleſt of *Engliſh* Trees; and found in Rows in our Highways, and at every Cottager's Door, except they be compell'd to give Place to Fruit-Trees.

In many Journies through *Shropſhire*, I have ſcarce ſeen two Elms of the right Kind. The Cruſt of the Earth there is too ſhallow. But the Root of the Oaks cleaves through the harder Earth, and ſurely finds a Marley Subſtance for his plentiful Suſtenance to the full Depth of his Stature,

> *Quod quantum vertice ad auras*
> *Æthereas, tantum radice ad Tartara tendit,*
> Georg. 2. ℣ 101.

All our Hills have ſometimes borne Oaks, or few fail'd, and I conceive moſt are very apt for it. But of late the Iron-Mills have devoured our Glory, and deflower'd our Groves.

We are generally noted to excel in all Kinds of Huſbandry; our Ploughs are light; but we liſten after further Directions which come to us through your Hands. The Rye of *Clebanger* and of ſome Parts of *Irchinfield* is as good as the Muncorn or Miſcellane of many other Countries; and our Wheat is upon the Ground far richer than I ſaw any in the fair Vale of *Eſome* in *Worceſterſhire* and *Warwickſhire*; as in my Travels, I ſometimes examin'd it in the Company of other more ſkilful Huſbandmen.

For Paſtures we add Improvements daily; and as a Stranger paſſeth by our Habitations, by our Fences, Orchards, Paſtures, Arable, he may diſtinguiſh a well-ordered Houſekeeper and a

Freeholder, from an over-rack'd Tenant and an Unthrift.

This is the Country where *Rowland Vaughan* began his Water-Works; and I can name you a great Number of admirable Contrivers for the publick Good.

The Lord *Scudamore* may well begin to us; a rare Example for the well-ordering of all his Family, a great Preſerver of Woods againſt the Day of *England*'s Need, maintaining laudable Hoſpitality regularly bounded with due Sobriety, and always keeping able Servants to promote the beſt Expediences of all Kinds of Agriculture. And Sir *H. L.* hath heartily proſecuted the ſame Encouragements. Our learned Mr. *B. H.* drives on the ſame Deſign, as far as the Glances of a moſt ſedulous Employment will permit. Mr. *R.* of *L.* is excellently apt, and conſtantly diligent in the Purſuit as well of Delicacies, as Neceſſaries. Mr. *S.* of *W.* hath in few Years raiſed an under Tenement, from 8 *l.* yearly, and ſo rented, to be well worth 60 *l.* yearly, and ſo rented, or thereabouts. He never fails in any Point of good Huſbandry. Mr. *F.* of *B.* hath raiſed his poor Paſtures from the Value of 2 *s.* 6 *d.* to be better worth than 20 *s.* yearly. *C. M.* hath metamorphoſed his Wilderneſs to be like the Orchards of *Alcinous*; herein alſo a hearty Patriot. I muſt ceaſe to name Men, ſince in every Village there is ſome excellent Republican.

With one ſad Note I muſt now conclude this Diſcourſe. I wiſh this ſore Proverb, *Bona Terra Mala Gens*, may not belong to us. The Moſt High hath filled us with his Bleſſings; but we fail ſo much in returning due Thanks, that we many Times turn his Bleſſings into heavy Curſes, and make his liberal Gifts the prevailing Cauſe of

all Doors and Highwa
and ſturdy Vagabonds
an honeſt Juſticiary to
in cleanſing the *Augea*
ſuch a cuſtomary and p
Expectation is, that i
break through the Difi
People, and force ope
Commerce. Let our P
preſs on all true-hearted
the Publick. For this A
pute, ſure of a Reward i
free from the Envy of M
ledged to deſerve everlaſt
ry. And thus alſo, in t
under a fit Veil of Mode
you, what Eſteem we c
Labours. I pray the L
Diligence in the great Da
Glory.

# POSTSCRIPT

## TO THE

## EPISTOLARY ADDRESS

## TO

## *Samuel Hartlib*, Eſq;

*SIR*,

HAVING employed one Day, upon a long Letter to you, concerning Orchards, and the Culture of *Herefordſhire*, and the Meſſenger being not yet gone, I ſhall now add ſomewhat, or at leaſt ſum up the Reſult of my former Diſcourſe.

The Ground for an Orchard ſhould rather incline towards the *South*, than towards the *North*: Yet no Neceſſity of Niceneſs in that Point. They prove well towards the *North*. So rather towards the riſing Sun than towards the *Weſt*. Yet the *Weſt* Wind is the beſt, and the *Weſtern* Sun beſt ripening. And the Blaſts commonly come from the

ence, that at a Mile'
Heavens is far more
another, either by th
in the Neighbourhoo
Vapours ariſing from
Grounds, which by F
For we have confirm
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Froſts following aft
Grounds make Froſts,
Places, become moiſt i
ſo ſometimes in a very
ſo cloſe, and the Sun's
flections, that it is apt t
(which, as I ſaid are the
hurtful to the nicer Fr
Furnace or Oven.

If the Cruſt or richer
near a Foot deep, it is
Cruſt of the Earth be d
ſeen any of our Stocks

the next following *Spring*, ſend for an Artiſt to graft them with the beſt Fruit.

The Crab-Stocks ſhould not be above the Bigneſs of a Man's Hand wriſt: If bigger, 'tis leſs apt to cloſe with the Graft, and then the Rain finds a Hole to the Danger of the Stock. Our uſual Cuſtom was upon the plain Stock to ſet two or three Grafts, which (for Variety) might be different, without any Hazard or Damage. Of late, many do ſlope the Stock for one only Graft, conceiving this the more certain Way to unite the Stock, and graff fully and ſpeedily. In a Nurſery, if the Stocks be as ſmall as Twigs, the ſureſt and ſpeedieſt Way is by the Joint-Graft, where no leſs than eight Sides are engaged, and this is an Improvement of the laſt Stamp.

We cannot truſt to any Artiſt, but have need to uſe a true and careful Friend in the Choice of Grafts from the fruitful Branch of a ſound and fruitful Tree. And an Error in this Point (beſides the Miſtake of the Fruit) may prorogue the Reward for five Years or more, which is a ſad Loſs. *Columella*'s former Note is worthy to be remembered in this Point.

If the Ground be very unequal, 'tis a great Charge, and a very groſs Vanity to level it. For there is a Kind of Beauty, and a ſure Refreſhment in a Wilderneſs; at leaſt it is a good Soil if appendant to a pleaſant Garden. And it may be better, more Kind, and more fruitful, moſt certainly more fit for Variety, and for all Change of Seaſons, by Inequality, than by Equality. And this is the Ground that is fitteſt for the natural Apple, who is then wronged, maimed or wounded, when he is hindred from his natural Courſe, or forced into Order. Yet I ſhould not plant him

*Leather-Coat.* Thei
nameleſs, are for the

For Cyder, the *Str*
ed; but 'tis but a
Plant, not apt to g
ſpending Strength f
that the Planter co
Decay of his own Wo
much commended fo
Tree long laſting. A
Fault; they abide not
ed together, but are
another.

I need not note fu
Choice for all Seaſons,
firſt Stocking of the G
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tainty of the Nature o
is a Beauty as well as
Pears grow long before
and for the moſt Part

For Hops, we make Haſte to be the chief Hop-Maſters in *England*; our Country having Store of Coppice-Woods, and many provident Men, within theſe three Years, planting Abundance of the faireſt and largeſt Sort of Hops. All about *Bromyard*, in a baſe Soil, there is great Store. At firſt we adventured only upon deep, low, rich and mooriſh Grounds; now we climb up the Hills with wonderful Succeſs. We find alſo that the Bottoms are apt to gather Heat as an Oven, (as is aboveſaid) and that begets Honey-Dews, when the more open Air eſcapes it.

Our Poets, New and Old, and all beſt Judgments, do highly commend the Pleaſure of a Grove, *Horat.* 12. *Epiſt.* 2. *Scriptorum chorus omnis amat Nemus, & ſurgit urbes.* We do commonly deviſe a ſhadowy Walk from our Gardens thro' our Orchards (which is the richeſt, ſweeteſt, and moſt embelliſhed Grove) into our Coppice-Woods or Timber-Woods. Thus we approach the Reſemblance of Paradiſe, which God, with his own perfect Hand, had appropriated for the Delight of his innocent Maſter-piece. If a Gap lyes in the Way between our Orchard and Coppice, we fill up the Vacancy with the artificial Help of a Hop-Yard, where a buſy Weed gives the Shape of a Wood. This muſt content us, till we can gain the Credit of a Vineyard, which as yet hangs between Hope and Fear. The late dry Summers did ſwell us with Hopes; the latter fickle Spring and moiſt Autumn, did blaſt, or drown our Expectation.

Some ſow Acorns, and Aſh-Keys, and other Seeds for Woods, in wild and hilly Grounds. Others count it much better to plant Quick-ſets,

Stone, and where Ma
neareſt at Hand : I f
Piece of Arable was mo
fruitful, than another.

We have a Belief,
face hath the richeſt En
lick Minerals, but alſ
or ſome other rich Mat
that which we eſteem t
it at the deareſt Rate
Reſpects, the pooreſt
our richeſt Land is eſteem
the Paſture very rich,
bearing the beſt Wheat ;
kind for Gardens, it doe
It is a ſlow Ground for
much inclinable to the M
to turn it into Paſtures,
Advantages of Land-floo
and the Ground ſeem ver
it is almoſt as good to gi
bout to turn it into P

On the contrary, in many Places of the hot Rye-land, where the Paſtures have a coarſe Sea-green Blade, or ſhort and poor, and where the Fields refuſe Wheat, Peaſe, and Fitches, there Sheep thrive beſt, and their Dung ſuddenly recovers the Arable, which is light and eaſy for a weak Team: In three or four Years, 'tis at the beſt for ſuch Paſture as it proves. The Paſtures quickly improved by fatting Sheep there, that may lye upon it Night and Day. The Land quick for Orchards, or any Sort of Trees, as well the talleſt Elms as the Aſh; eaſily fitted for Gardens, for Hemp, Flax, Turnips, Parſnips, *&c.* Hence you may judge, which of theſe were more worthy to be called the Richer Land; if the rich Water-floods did not give the rich Paſtures the Advantage on one Side. And hence you may ſee what Prevalency there is in the Advantage of Paſture only.

I have ſeldom ſeen Paſtures forced by Compoſt in this Country, as I have ſeen elſewhere. Only in the Winter we feed our Cattle on the higher Paſtures, and in the Hazard of a Rot, ſome follow the Directions of *Gabriel Plat*, in putting out their Sheep all Nights; which hath proved a Safeguard to the Sheep, and a great Help to the Paſture. Other Helps of Paſture we do omit, every Rill of Water is carefully conducted to the beſt Uſe. If it runs from a fat Stream, Land-flood, or Lime-ſtone, we find Benefit in it, if withal we let it paſs over and away, before it exchangeth its Fatneſs into a cold Hunger, which falls out in a very few Days. Some Water we find ſo hungry, that we dare not receive it, but at Seaſons of Neceſſity. Lime we have ſeldom tried upon Paſture. Aſhes we find excellent to beget the white and purple Honey-ſuckle, if ſifted

Gilt-cups, which is a Kind
makes the Fat of their Bee
were of an old Beef.

The Honey-ſuckle and G
the ſowerer for the Breed
harder and ſtronger for lab
it be rough, and little bette
'tis the better for Horſes, t
them for the Saddle. In an
for the fuller Illuſtration, I
fed upon high Grounds and
Travel, as much beyond
lower Meadows, as a *Lis*
Activity. For a Bag to M
may breed them in the low
ſhall ſee them big-limb'd, w
tire themſelves with their o
The others that are bred
Airy and Sinewy, full of
Shape like the *Barb*: Th
gather Courage and Deligh
Thus Colts well choſen, an

liable to two Kinds of Rot: The one is only of the Liver at firſt, and if it be diſcerned, 'tis cured by the Butcher's Knife, without much Loſs to the Owner; the other prevails over the whole Body of the Sheep, and makes the Fleſh fit for nothing but Dogs. I know ſome Places, in which there hath not been a Rot in the Memory of any of the Inhabitants; but there they change often, becauſe the Ground is very ſtony, and, in two or three Years, wears out their Mouths: And nothing preſerves Sheep better than Change of Soil. Our common Huſbandmen keep their ſmall Flocks at all Adventures, without much Care or Caution. But for larger Flocks our Shepherds of *Lemſteroer* and *Irchinfield* are moſt incomparably expert.

Whilſt this Letter is under my Hand, by a Conference with Mr. *S.* concerning Orchards, I am aſſured, that upon along Trial (as in a Way of Conteſtation) it was found experimentally, that ſome Apples, raiſed of Kernels, did exceed the beſt that could be found of grafted Apples in Delicacy of Taſte.

That he tried to meliorate the *Kentiſh* Codling, by a Graft of the ſame Kind, and it proved worſe.

That a near Neighbour made a Hogſhead of Cyder of *Kentiſh* Codlings only: He taſted it this very Week. It had a Taſte far differing from all other Cyder, not bad, nor very excellent. That it looks like Perry, of a wheyiſh Colour.

He alſo gave me at his own Houſe a moſt pleaſant Drink, which I thought to be Cyder, and perferr'd it before Red-ſtreak'd Cyder, which was of the beſt, and, for Trial, brought out to me and others at the ſame Time. This commended Drink was compounded of Crabs never hoarded, but ſhaken from the Tree, and immediately ground together with Perry of that luſcious Kind, which, at this Time of the Year, is always wont to be roapy. This Drink was not clear, but had ſome Reſemblance of roapy Perry. But he aſſures us, that the Crab does by this Compoſition always preſerve the Perry from being roapy. If ſo (as of all Men I can beſt believe him, who will not break his Word to ſave his Life) this is an excellent Art, at one Time to make Crabs, which grow naturally in all wild, dry, and barren Soil, a rich Fruit; and by them alſo to make a rich Benefit of thoſe Pears, which, in the Language of another good Huſband, were called a cumberſome Weed.

He preſcribeth that the more luſcious the Pear be, the more Crabs be added to it. By the Taſte in the Mill, you may fit it generally more Pears than Crabs. He noteth that theſe Crabs were not of the forementioned *Broomſbury* Crabs, but common Crabs; of which common Crabs he advertiſeth there are two Sorts. The firſt ſoon ripe, and yellowiſh, and fit to be mingled with the Pears that are firſt ripe. And of this Kind was the Cyder that he gave to us. The other is a more ſullen Crab, green about the End of Autumn. This agrees with its contemporary Pears. Or to make a Kind of *Scythian* Wind, fit to quicken the Palate of a ſturdy Hinde, they may be laid in Heaps for a Month's hoarding, and then ground by themſelves, or with Winter Apples. We know how welcome to foreign Peaſants, and alſo to our Seamen, a rough Vinegar or Verjuice would be, either to mingle with Pottage, or with Water for Drink. We have not yet felt ſo much Want in *England*, as were neceſſary to teach us the Uſe of Crabs or other general Branches of Frugality. The *Broomſbury* Crab, ſo often mentioned, is far larger than either of the Sorts, and in Shape like an Apple.

*SIR*, 'Tis Time I ſhould now give you Reſt. In this you may ſee my hearty Deſires towards the Improvement and Welfare of our Native Country. If we muſt be hindred of Trade with *Spain*, I wiſh our *Engliſh* Indignation would ſcorn to feed at their Tables, to drink of their Liquors, or otherwiſe, to borrow or buy of them or of any other of their Confederates, as long as our Native Soil did ſupply us with Neceſſaries. I pray God to ſtrengthen us all in a firm Love to his holy Truth, and in a mutual Love to each other, under the Shelter of his everlaſting Mercies.

*Hereford*,
*May* 13, *Your Servant in the Lord*,
1656.

I. B.

* * *

## *An Extract of Mr.* Hartlib's *Letter, dated* September 4, 1656.

He deſires, that theſe Letters may be preſented to publick View, for an Example to worthy Men in other Countries to do the like in theſe, and other Parts of Huſbandry. That the *Latin* Paſſages ſhould be turned into the vernaculous Language, and many Expreſſions altered into more plain and common *Engliſh*, that all vulgar Capacities may underſtand them, *&c.*

### *The Anſwer.*

1. That it is now too late to poliſh any Parts of thoſe Letters with ſuch Accurateneſs, as becomes a Piece dreſt for ſevere Judgments. If it muſt flie abroad, it muſt go as it is, all Parts alike, in the free Garb of a natural Simplicity; written with Speed, and with more Care of Truth, than of fit Words.

Inſtead of a Tranſlation of *Collumella*'s Sentence, *page* 507, *line* 14, I would annex this ſhort *Engliſh* Gloſs; That which is far fetch'd, may have little Familiarity with our Soil, and may a long Time take it unkindly to be baniſhed from its Native Place.

I dare not adventure for an exact Tranſlation, having no other Edition but that of *Hieron. Commeline*, 1595, which is ſo full of Errors, that I ſuſpect every Line. It were an excellent Work, if any Man would publiſh a well-corrected Copy of the four *Roman* Huſbandmen, they being rare Monuments of Antiquity; the firſt, namely that of *Cato* the Cenſor, being almoſt 2000 Years old. Being now deſtitute of Libraries, if I ſhould undertake it, having no one old Exemplar upon which I ſhould frame my Conjecture, at the beſt Succeſs, I ſhould ſhew more Wit than Honeſty. For I hold it a moſt pernicious Preſumption, to intrude our own Fancies inſtead of ſuch great Authorities.

*Page* 514. *line* 16. The *Latin* may be un-tranſlated, being but a rational Inference, to authorize that which is there ſaid in *Engliſh*.

*Page* 515. *line* 10. *To the World's End.* I uſe theſe Words in a vulgar Senſe. For in very Truth, and well grounded Theology, we have no Reaſon to conceive it to be long now, before the World ſhall be changed or conſumed by the laſt Fire.

*Page* 515. *line* 28. To explain this *per Quincuncem* to the dulleſt, we may add theſe *Engliſh* Words; as in a Diaper-Napkin, or in common Glaſs-Windows, which is the rhombular Figure.

I dare adventure to uſe no more than the firſt Letters of ſome Mens Names, leſt I have Blame for my good Meaning. As in this I have merited little, ſo I expect no better Reward; yet you have very much obliged me ever to ſubſcribe,

*Yours unfeignedly.*

I. B.

To my very worthy Friend.

AN

# APPENDIX

To the NEW

# IMPROVEMENTS

OF

# *Planting* and *Gardening*.

CONTAINING

- The Culture of ſuch Foreſt-Trees, Flowers, *&c.* as were omitted in the former Impreſſions; *viz.* The Fir, Pine, Pinaſter, *&c.*
- The Method of Raiſing the Truffle, Morille, and Muſhroom.
- Of the extraordinary Production of the Chaddock-Orange.
- The ſeveral Manners of GRAFFING.
- A particular eaſy Method of managing the Ananas or Pine-Apple, the Bananas, the Guava, the Mango, and other delicious Fruits of the hotteſt Climates.
- Of DECOYS for WILD FOWL.

With ſome remarkable Particulars, not yet publiſhed, relating to the *Guernſey-Lilly*, and the *Coffee-Tree*.

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Illuſtrated with COPPER PLATES.

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By R. BRADLEY, Profeſſor of Botany in the Univerſity of *Cambridge*, and F. R. S.

TO
*KNOX WARD*, Eſq;
*Clarencieux* King at Arms,
This APPENDIX
TO MY
NEW IMPROVEMENTS
OF
*Planting* and *Gardening*,
Is Dedicated,

*By His Moſt Humble*
*and Obedient Servant*,

R. BRADLEY.

# AN APPENDIX To the NEW IMPROVEMENTS OF *Planting* and *Gardening*.

SINCE I have written upon the Subject of Foreſt-Trees in my *New Improvements*, ſome Gentlemen have thought it neceſſary for me to enlarge a little upon that Head, and that I ſhould inſert the Method of propagating ſuch Trees as are there omitted. The Timber Trees there mention'd, are, the Oak, Aſh, Beech, Elm, Cheſnut, and Wallnut. The Elm, indeed, according to the Foreſt Terms, is not a Timber-Tree, but is ſtyled by the Foreſters a Weed, and grows among the Herbage; but the Fir and Pine I omitted, by Reaſon of their being not ſo common in *England*; however, as I have ſince found that they will produce good Timber with us, and improve one of our Soils, which has been accounted barren and unfertile, I ſhall now give a ſhort Account of their Culture. We are firſt to take Notice, that our Heath Grounds and our Rocky Grounds which yield little or no Profit at preſent, are extremely proper for theſe Plants, even tho' the firſt conſiſts of the moſt barren Sand, and the latter has little or no Covering of Earth; and it ſeems to me, that all the Fir Kind will grow in any Soil or Situation.

## *Of the Fir, Pine, and Pinaſter.*

AS all theſe are propagated by Seeds, it will be neceſſary to ſay ſomething of the ſaving of the Seeds. We muſt gather the Cones when we obſerve that they begin to change their Colour from green to brown, which commonly is about the End of *Auguſt*; for in *September* they begin to crack and ſhed the Seed, which, with an hot Day or two, will ſhed, and be loſt, for the Birds are very voracious of them. When we have gather'd the Cones, we may ſpread them upon Mats, and expoſe them to the Sun, which will open them, and diſcharge the Seeds and Nuts; theſe, when they are clean'd, muſt be kept in a dry Place, and in *March* following muſt be ſown upon Beds cover'd over with Nets; the Fir Seeds pretty ſhallow, and the Pines ſomewhat deeper; and the Winter following ſift a little Sand over them to ſettle the young Roots to prevent the Froſt from turning them out of the Ground. Some ſow them in Boxes to let them ſtand two Years, and then carry the Boxes to the Place where they deſign to make the Plantation, which may be done in *April*, planting every one in a thin Mud made of Earth and

Water. The Diſtances which we may plant theſe Trees from one another, may be about three Foot, and may ſo remain for four or five Years; at which Time we may tranſplant every other Tree at the ſame planting Seaſon mention'd above, and in the ſame Manner. Theſe Trees proſper extremely in the moſt barren Heath Ground, and even in the moſt unfertile Sand: They are quick Growers; ſo that in twenty Years they will be worth about twenty Shillings a Tree, if they are planted for Groves; or elſe, if they are planted ſingly, perhaps they will not be worth ſo much in thirty Years. The Sorts of Firs are, the *Scots* Fir, the *Silver* Fir, the *Norway* Fir, and the Pitch Fir; but the two firſt do beſt with us: And as for the Pine and Pinaſter, they proſper extremely, as may be obſerv'd in many Places in *England.*

## *Of the Sycamore or Great Maple.*

THE Sycamore is noted for a quick Grower, it will thrive almoſt in any Soil, where Trees of more Eſteem will not proſper, but chiefly delights in a dry and light Earth. It is raiſed of Keys or Seeds ſown in the Spring. As the Leaf continues on them the ſhorteſt Time of any Tree, they are not eſteem'd proper for Avenues or Walk, and are apt, by a Kind of ſweet Moiſture, with which they abound, to harbour and propagate Caterpillers and Inſects, which adds to their Inconvenience for Walks. They may be planted in Parks, becauſe the Deer are not fond of them. The Wood being tough and light, is held little inferior to Aſh, and is of great Uſe for making Ploughs, Carts, *&c.* and for all Manner of Turnery Wares. It bears

Tranſplantation very well, and of any *Size*, chiefly in *February*. This Tree is extremely uſeful to make Plantations near the Sea, being a Plant which no Storm or Wind can eaſily hurt, but ſeems to proſper beſt when it is moſt expos'd to Winds; therefore Woods or Groves of this Tree ſhould be planted to ſhelter our Gardens that lye near the Sea.

## *Of the Maple.*

THE Maple will grow in any Soil, but delights moſt in dry Land, and flouriſhes more on Hills than on Plains. It is very ſubject to ſhoot out-ſide Branches, which fills it with Knots and Burs, and makes it very much valued by Cabinet-makers, *&c.* When it is free from Knots, it makes curious Boards, and is frequently choſen, by Reaſon of its Lightneſs, for Muſical Inſtruments. It is unfit to be planted in Hedges where there are other Trees under it, by Reaſon of a viſcous Subſtance which it ſheds, that is pernicious to the Buds of whatever it falls upon. It is alſo very uſeful to the Turner. It is propagated by Seed ſown in the Spring, like Sycamore. It may be managed the ſame Way as the Aſh; the Seeds will not come up 'till the Year after they are ſown; it will bear Tranſplantation at any Size: The beſt Time for which is the Beginning of *February*, or the latter End of *October*.

## *Of the Lime-Tree.*

THE Lime-Tree, or Linden, is of two Sorts; the Broad-Leav'd which comes from *Flanders*, and the wild Kind, which grows naturally in many Places in *England.* The firſt is a much quicker Grower than the other: And by reaſon of an ill Scent natural to the wild Lime, is much to be preferr'd; tho' this is eſteem'd to yield more ſerviceable Wood; and of the Bark is made the Baſt which is ſo uſeful to Gardeners. They may be both propagated from Seed; but as that is attended with great Trouble and Hazard, it is much the better Way to raiſe them from Layers or Suckers, which the Root plentifully ſhoots forth: And this being done about the Middle of *September*, they will ſoon ſtrike Root and be fit to tranſplant into the Nurſery in a Twelvemonth; being proper to be manag'd by the ſame Method as the Elm. They chiefly delight in a Sandy Loam; and I know no Soil which diſagrees with them, except it be a ſtrong Chalk, which is apt to make them Moſſey. They will bear the Smoak of the Town where other Trees will not grow; and may be tranſplanted when they are ten or fifteen Foot high, and do very well, eſpecially, if they have been accuſtom'd to be dug about in the Nurſery. It is of a fine green Colour, and caſts a large Shade, which renders it very convenient and ornamental for Walks: It will bear Pruning, and inſtantly heals upon it; and ought to be planted for Avenues at about fifteen or twenty Foot aſunder. The Wood is good for making Models for Builders, and is much coveted by Ship-Carvers, being not liable to ſplinter, and being of a fine white Colour, and both ſtrong and light; and the Twigs are fit for Baſkets, and for every Uſe that the Willow is good for: And finally, the Coal is look'd upon as a better Ingredient for Gunpowder than even Alder itſelf. I know a Gentleman who has lined ſeveral Rooms with this Wood inſtead of Wainſcot or

Deal, and hold very good, 'tho' it has been done upwards of twelve Years.

## *Of the* Service-Tree.

THE *Service-Tree* may be raiſed by the Berries ſown in *March*, the Pulp of the Fruit being rubb'd off to come at the Seeds; it may alſo be propagated by Layers, and be tranſplanted of any Size, from Woods where they frequently grow. It affects a rich Clay Soil, inclining to be moiſt, and never bears well in dry Grounds, unleſs it is propagated from Seeds; in which Caſe, almoſt any Earth becomes natural to it. It puts forth Leaves very early, and even buds out in the hardeſt Weather, which makes it a delightful Ornament for Avenues. The Wood turns to good Account for Gun-Stocks, Pullies, Spindles, Screws, and is in much Eſteem by the Engravers in Wood, being of a pleaſant Grain, and very durable.

## *Of the* Horn-Beam.

THE *Horn-Beam*, of all the hard Woods, is the quickeſt Grower, and makes the cloſeſt Hedges, and cover'd Avenues, of any; and as its Leaves are durable, and of a beautiful Green, it is very much valued for this Uſe. The Wood being very white and tough, is much eſteem'd by the Turner, and is very uſeful for Laſts, for Handles of Tools, *&c.* and is excellent Fuel. It is beſt raiſed from Layers or Suckers, which are always ſhooting from the Root; tho' it may be alſo propagated from Seed, which being ripe in the Month of *Auguſt*, ſhould be ſown in *October*. Its natural Soil is Chalk, and it ſeems to delight in Mountains, or will thrive in ſtiff, clayey, moiſt, barren Places in Woods, and in Parks, for the Deer will not hurt it: It affords, as has been ſaid, an excellent Shade for Walks, and will live under the Droppings of other Trees. It may be either tranſplanted at 9 or 10 Years Growth for a Standard as other Trees; or, when it is about the Bigneſs of your Finger, may be planted for Hedges, cutting it the next Year after planting within ſix Inches of the Ground.

## *Of the* Birch-Tree.

ALtho' the *Birch* is reckon'd one of the moſt indifferent Trees, yet its Wood is very uſeful for Screws, Brooms, Hoops, *&c.* as alſo for ſeveral Sorts of turn'd Wares: Its Sap makes a wholeſome Wine, and 'tis good for Fuel, and makes excellent Charcoal; and ſome there are who ſuppoſe that its Bark is preferable to that of the Oak, for Tanning: It cannot therefore be an unprofitable Tree to plant. 'Tis propagated by Suckers, and thrives beſt in a dry barren Soil, where hardly any Thing elſe will grow; but refuſes no Sort of Earth, not even that which will bear no Graſs; and is a proper Plant for any rocky, ſandy, or gravelly Heath, *&c.* which renders it more worth while to propagate, by thoſe who are the Owners of ſuch barren Places. I have likewiſe ſeen it do well in wet ſpringy Ground.

## *Of the* Poplar.

WE have two Kind of Poplars worth our Notice, *viz.* the White and the Black Poplar. They will grow on any Sort of Land, but delight moſt in a moiſt Soil. The Aſpen-Tree, and the Abele delight alſo in moiſt Places, and their Method of Cultivation is the ſame as that of the Poplar in every reſpect. They are very apt to ſpawn or produce Suckers from the Roots, from which they may be raiſed. Their Roots take up a great deal of Ground, and they are therefore very detrimental to Fruit-Trees planted near them: But where a ſpeedy Shade and Walks are deſired, they are preferable to any other Trees, eſpecially the Abele, which frequently ſhoots forth Branches of ten or twelve Foot long in a Year. It is a Tree that grows to no great Age, but the Wood is uſeful for all Sorts of white Wooden Turners Wares, and is ſerviceable for Building where it lyes dry; and makes very good Boards. It may be eaſily tranſplanted when large, at fifteen or twenty Foot Diſtance; or it may be planted out when it is ſmall, which being kept clean weeded, the moſt flouriſhing Shoots may be pruned up for a Year or two, or longer: Theſe will grow to great Perfection in twenty Years: And by Reaſon of its ſpeedy Growth, cannot fail of being profitable to its Planter; and particularly where Fuel is ſcarce, great Quantities of it are planted, the Lopping whereof, which is generally done in *January*, affords good Store of Wood for that Uſe.

## *Of the Trying or Proving of Soils.*

THO' I have given an Account of Soils in my New Improvements, I think it will not be unneceſſary to preſcribe the Method of proving them. If we take Clay of different Kinds, and lay every Sort in ſo many different Pans of Water 'till they diſſolve, either of themſelves, or by Force, we ſhall find either a viſcous or oily Matter ſwimming upon the Surface of the Water; and upon examining the earthy Parts, we ſhall find its Principle, Sand co-mixt with duſty Parts, as will appear by the Microſcope, which will plainly diſcover them to be broken Parts of either Vegetables, or of ſuch Things as have had proper Veſſels for their Juices to move in, ſuch as cannot be found in Sand, or any Kind of Stone.

It is obſervable in Clay Lands which lye upon a Deſcent, that by great Rains, ſome of the Parts of the Clay lying next the Surface, are frequently carry'd by Drifts into Hollows, which by a violent Daſhing of the Waters, loſe the viſcous or oily Matter which bound the Parts together, ſo that when this is dry, it will become like Duſt, open in its Parts; but without ſuch Waſhing would become hard by drying, as all Clays, or Bodies conſiſting of fine Parts of Vegetables or Animals, mixt with oily or viſcous Matters, will do by Inſolation. This we may obſerve by Meal and Water, when they are mixt together in Paſte, where the Parts of the Vegetables being viſcous, they bind cloſely when the Water is put to them, and become of an extraordinary Hardneſs when the Maſs is throughly dry; and if we mix Flower or Whiting with Oil, and let ſuch Mixtures remain till they are dry, they become hard as a Stone.

Again, if we put Oil, or any viſcous Matter to Sand, which has been waſh'd clean from the Vegetable or Animal Parts, we ſhall find that this Maſs, when it is dry, may be freely broken; but if we mix ſuch Mould with it as proceeds only from rotten Leaves, it will become of a very binding Nature, even as tough as any of that Soil which we call natural Clay.

## *Of the watering of Plants.*

WE will here conſider how Plants in general are affected by Water, and what are the viſible Signs of the Want of it.

Every Plant, whether it has a bulbous, tuberous, or fibrous Root, receives its Nouriſhments by Means of the watry Parts in the Earth at the Extremities of its Fibres; for all Bulbs are nouriſh'd, as well as tuberous Roots, by the Mouths of their Fibres.

For this Reaſon it is neceſſary, when there is an Occaſion for watering a Plant, that we pour the Water where we can reaſonably ſuppoſe the extream Parts of the Fibres lye; which, in large Trees, may happen to be a conſiderable Diſtance, even ſix or eight Foot from the Body or Stem of the Tree, or ſometimes about two or three Foot, according to the Size of the Tree; but if we water ſuch Trees, as is the common Practice, cloſe to the Stem, the moſt of the Fibres are not benefited by ſuch waterings, and the Tree ſtill ſuffers; neither ſhould we alone conſider the Neceſſity of watering immediately, where we may judge the Mouths of the Fibres may be ſituated, but refreſh the Ground plentifully a Foot or two beyond that Place; that the Water may not be too ſoon exhaled, but have Time to lye and nouriſh the Tree, as well by the Roots, as by continuing its humid Vapour about the Stem, Leaves, and Fruit, to nouriſh the more ſpungy Parts of them, while the Roots are gathering convenient Subſiſtence for their Offices.

The Signs of a Plant's want of Water are many; but it is dangerous to wait 'till they appear, for our Remedy may come too late: We are acquainted with the Diſtreſs of Plants by the ſhrinking of the Leaves, by their turning yellow, by their flagging or hanging down, and by the dropping of the green Fruit in Trees; ſo that whenever any of theſe Tokens declare their Wants, we muſt not delay to give them good Waterings, as I have before-mention'd: A Day or two, if the Weather be very hot, as one may reaſonably ſuppoſe it muſt be when this happens, is likely to occaſion the Death of the Tree; or if it be a ſmall Plant, we may be ſure of its Deſtruction by a Day's Neglect.

We ought in this Caſe to conſider our Soil, whether it be Sand, or Clay, or light open Ground, or ſtrong ſtiff Land; if it is the former, watering of our Fruit-Trees will be neceſſary more frequently than in the ſtrong holding Soil; a Fortnight or three Weeks dry Weather in Sandy Land is enough to truſt a Fruit-Tree without Water, eſpecially if it happens to be in

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D the Angle of one

EE the Skreens or

F the Tunnel Net,

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Canal and another.

Plate II. *A View of Par*
*the Canals* ...

A the Net-Work over

B the Net-Work where

C the Skreen of *Reed*

*from the Sight of the Duck*

D Holes in the Skree

through.

When we have Trees or Plants in Pots that require a great Share of Water, they ſhould be ſet in ſhady Places during the great Heats of the Summer, or elſe the Bottom of their Pots may be ſet about an Inch deep in Pans of Water, from whence, thro' the Holes at the Bottom of the Pots, the Plants would draw what Water they require, and ſo will remain in good Condition a Fortnight in the hotteſt Weather, without ſupplying the Water Pans: This is much the beſt Way of treating Myrtles in the Summer, as well as all other vigorous ſhooting Plants which are not ſucculent.

## *Of DECOYS.*

AS there are many Gentlemen who have a large Command of Water, eſpecially near ſuch Places where wild Ducks are frequent, I conceive there can be nothing more advantageous in ſuch Places than the making of Decoys, nor, indeed, can there be any Thing more delightful.

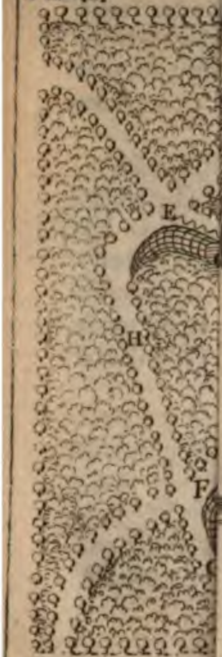
To make a Decoy, we muſt chuſe out a Place where we have an Opportunity of forming a large Piece of Water, from which we muſt make Canals branching out, either three, five, or more, according to the Magnitude of our Water, each Canal terminating in a Point, after one Angle made, all well planted about with Alders, Willows, Sallews, Oziers, and ſuch Underwood. On one Side of each of theſe Canals, from the Angle to the Mouth, are placed Pannels of Reed about the Height of a Man's Breaſt, ſet in the Manner of a Skreen, with

The Decoy being thus prepar'd, and planted with Alders, Willows, and ſuch other Trees as will grow in moiſt and watry Places, either from Truncheons, Sets, or Twigs, it will, in about two Years, be fit for Service; and during the two firſt Years, will furniſh ſo much Cover for the wild Ducks that fly that Way, that they will begin to breed there, and entice others to the ſame Place, as well as Eaſterlings, Widgeon, and Teale. It is to be obſerv'd, that theſe Places are kept as quiet as poſſible, and hardly any is allow'd to ſpeak, for fear of diſturbing the Fowls; for theſe Kinds of wild Fowl are very timorous, and a ſmall Diſturbance will go near to make them abandon their Abode. It is remarkable, that theſe Decoys are generally in flat Countries, where there is hardly any Trees growing but what are in the Decoys, ſo that the Ducks are allur'd by the Trees as well as the Water; and in ſuch Situations are generally caught in greater Abundance than in woody Countries. It is incredible almoſt to think the prodigious Numbers that are taken in a well-placed Decoy; that even one will bring in five, ſix, or ſeven hundred Pounds *per annum* to the Owner, if it be well managed, and within Reach of a good Market; and this Advantage will be pretty conſtant when it is once ſet on Foot; for when there is once a Colony rightly eſtabliſh'd, they may be expected to encreaſe rather than diminiſh, for they will continually draw in more, if they are not frightned. And there is one Thing particularly to be obſerv'd, which is, never to let any one eſcape that has been taken in the Net, for he will certainly quit the Place, and take a great Number with him; which I mention, be-

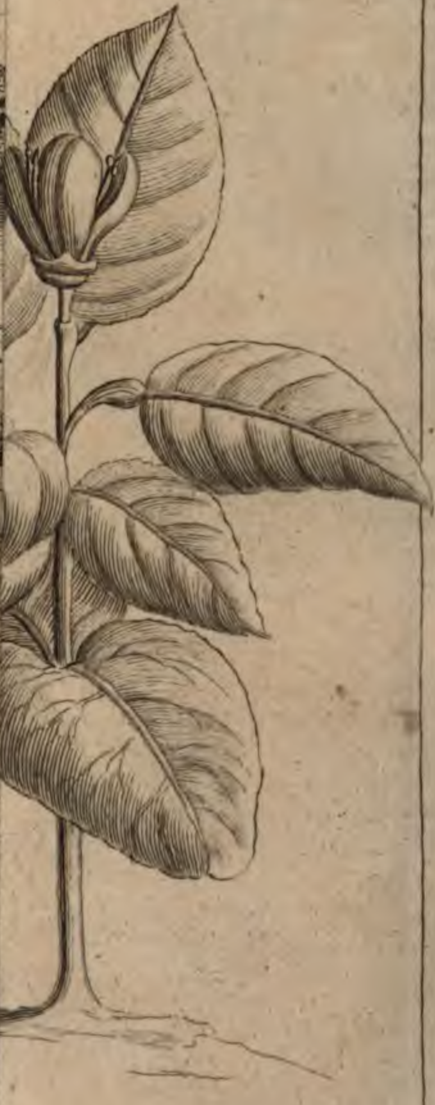
cauſe

Plate.II.

Plate.I.



P. 556.



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## *Of Graffing and Inoculating*, &c.

I Shall now proceed to explain the ſeveral Ways of Graffing, by which Trees are improv'd from Wildings to bring good Fruit: In order for which Deſign, our Garden ought to be ſtored with Stocks of all Sorts, that is, with ſuch as are Pomiferous, or Apple-bearing; Pruniferous, or Plumb-bearing; Bacciferous, or Berry-bearing; Coniferous, or Cone-bearing; Nuciferous, or Nut-bearing; Glandiferous, or Maſt-bearing; and Siliquiferous, or Cod-bearing; becauſe we may ſometimes meet with a ſtrange Tree, which will only be encreaſed by Graffing; and as all Trees that I can now think on, are of one or other of theſe Claſſes, ſo our Nurſeries ſhould be provided with Stocks of theſe ſeveral Sorts, that we may graff the Apple-bearing upon the Apple-bearing, the Pruniferous upon the Pruniferous, and ſo on.

The Wilding which we are to graff upon, we call the Stock, and the Twig or Shoot which we are to graff upon the Stock, is call'd the Cion or Graff; every Cion or Graff, when it is rightly diſpos'd on the Stock according to Art, will take Root in the Stock, and retain the Virtues of its Mother Plant.

Some Sort of Plants will more readily join by Eneying or Inoculating, than by Graffing; and there are others, which will not take by either of thoſe Ways, but by Inarching only; again, there are ſome which will only join by Approaching: All which we ſhall conſider in order, obſerving, by

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the Wood bare about an Inch and half from the Place where the Head is cut off downwards towards the Root, and as wide as the Cion which we deſign to join with it; then we muſt, with our Knife, ſlit the Stock down from a little below the Place where the Head is cut off, guiding it with the Grain of the Wood, 'till we have made a Tongue on the Side of the Stock where the Bark is par'd off about an Inch long; this being done, we are next to pare off the Bark from one Side of the Cion, and then with our Knife make a Tongue in the Wood of the Cion, of ſuch a Length as may fit exactly with that in the Stock, which, when we have placed together, ſo that the Barks of both the Cion and Stock join, we muſt tye them faſt with Baſs, and cover all the wounded Part with fine Loam well mixt with Cow Dung; or elſe we may cover the wounded Part with the following Mixture, *viz.* To four Ounces of Bees-Wax add as much Tallow, and when theſe are melted together, add about an Ounce and half of Roſin; which muſt be uſed, when 'tis Blood warm, with a ſoft Bruſh; and then we need not tye the Cion and the Stock together, for theſe Coverings are only deſign'd to keep the Air and the Wet from the wounded Parts till they are united, which they will ſoon be, if the Tongues of the Stock and the Cion are well wedg'd into one another: When we uſe this Sort of Graffing without the cutting off the Head of the Stock, we then take the Bark from the Stock in any ſmooth Part of a Shoot, *i. e.* between the Buds, and fitting the Cion to it as before with Tongues, we then cover the wounded Parts with ſome of the afore-mention'd Graffing Wax. This laſt Operation may be done when the Sap is in its higheſt Fluencies; but the firſt

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dinary large Fruit, tho' before the old Head was cut from it, the Fruit was hardly bigger than Hazel Nuts. Here is another Example of a Tree's growing upon a Tree; and as the Cleft-Graffing is practicable upon the oldeſt Trees, ſo it is to be done upon Plants which are not above three Months old from the Seed. This I learn'd from Mr. *Curtis* of *Putney*, a very curious Gentleman in the Knowledge of Plants: His Method is, when he raiſes Orange Trees from Seeds, that as ſoon as he finds they have got a Stalk about three Quarters of an Inch above the Ear-leaves, he cuts off the Top, and making an Inciſion croſs that Stalk, bears his Knife downwards towards the Part where the Ear-leaves join with it; and then chuſing a tender Shoot of a bearing Tree that will match with the Stock, he cuts the Bottom of it in the Manner of a Wedge, and places it as I have related before, ſo that the Barks may join; and then applies ſome of the Graffing Wax warm with a fine Painting Bruſh. This Operation may be done all the Summer long, and is particularly explain'd in my *Philoſophical Account of the Works of Nature.*

I am next to ſpeak of Inarching, that is, inlaying the young Shoots of one Tree into another, which is the ſureſt Way of Graffing that I have yet mentioned; for here, if the Part which acts as a Cion, does not happen to join with the Stock, it may ſtill remain upon the Tree. To perform this Work, one muſt have a Collection of Stocks in Pots, that when we have any particular Tree which we have a Mind to increaſe, we may bring the Stock to it; and then cutting off the Head of the Stock, we chuſe out ſuch a Shoot of the valuable Tree, as may with the

[illegible]

[illegible] the Fig [illegible]

[illegible] Madras, as [illegible]

[illegible] abovementioned [illegible]

prun'd a little, ſo as to make it terminate in a Point, and when it is fix'd, we muſt cloſe the Orifice with Graffing Wax. This is now out of Practice among the Gardeners, but I find it of good Uſe, eſpecially in difficult Caſes: The Time I have try'd it with Succeſs, was when the Bark would ſlip eaſily.

*See the* Plate VI, *for the ſeveral Manners of Graffing.*

## *Of the Situation of the Kitchen-Garden.*

I Come now to ſpeak of the Manner of diſpoſing of a Kitchen-Garden to the beſt Advantage.

A Kitchen-Garden ought chiefly to be the Place where we cultivate our choiceſt Fruits, as well as Herbs and Roots, for the Uſe of the Table. It ſhould, if poſſible, be wall'd about, for the Sake of the tender Fruits which we ought to cultivate there, as well as for Security. This Garden ought particularly to be well expos'd to the Riſing Sun and the South Sun, to give the Contents of it the greater Perfection, and bring them to a due Maturity. Here we ought alſo to have the Command of Water; and there ſhould be an eaſy Connexion between this and the Stable-Yard, for the more eaſy bringing the Dung, or other Manures, and carrying out of Weeds, or other Incumbrances. The beſt Way for ſuch a Garden to be diſpos'd, is to lay it in large ſquare Quarters, and to fence in ſuch Quarters with Eſpaliers of Fruit-Trees, ſuch as Pears, or Vines of the earlieſt Ripe Grapes, or Abricots, or have no Body to blame but himſelf if any Miſchance happens. In this Place ſhould be a Frame for ripening Fruits artifically, if ſuch a Thing is deſir'd; and alſo a Tool-houſe, and a proper Place for drying of Seeds and Herbs, and preſerving of Fruit; with Conveniencies, if poſſible, for the Gardener to reſide, that he may always be ready to ſurvey his more curious Works, and be in the Way to defend his Treaſure of Fruit from Robbers, which ſhould be conſtantly under his Care, if he be an underſtanding Man, that every Sort may be brought to Table in its proper Seaſon; and not, as it too frequently happens, to ſend a fine eating Fruit to the Oven, becauſe they are lodg'd in ſuch Hands where they are not underſtood, and often occaſions either a Reflection to be caſt upon the Nurſery-Man who provided the Trees, or on the Gardener's Conduct; for my own Part, I find it the beſt Way to have the Name of every Sort of Fruit that is planted in a Garden, written at length upon a Board placed over the Tree, that every one may ſee it. This Method will ſave the Loſs of a great deal of Fruit in a Garden much frequented; in which Caſe it is too frequently practis'd to gather harſh unripe Fruit, and, after the firſt Taſte, to fling it away; and then in the firſt Company to decry the Fruit of the whole Garden; tho', perhaps, it poſſeſſes the beſt Collection in the World.

## *Of the Truffle, and its Culture.*

SINCE I have found that my Obſervations concerning the Raiſing of Muſhrooms have been ſo well receiv'd, that there is now hardly a Garden of any Note near *London* without them, or where there has not been Attempts made to produce them in every Month of the Year, I am perſuaded, that the following Account of the Vegetation of Truffles, and of the Method of their Culture, will prove altogether as acceptable. I am told, indeed, 'tis much too great a Secret to divulge, and that to keep it in my own Hands, might be of the greateſt Conſequence to me in my Fortune, conſidering, that every Pound of Truffles, freſh gather'd, is ſold for a *Guinea*; but however that might be, I am petrty well perſuaded, that I ſhall merit more Eſteem by making it familiar to the Publick, and ſhall reſt myſelf contented with the Pleaſure of doing ſomething which may contribute to the Pleaſure of my Countrymen; and, beſides, by making the Truffle more common, it will become cheaper, and our Taſtes may be ſatisfy'd at leſs Expence. But to proceed: Let us firſt conſider, whether the Truffle be a real Plant or not. Monſieur *Geoffroy*, of the Royal Academy of *Paris*, in one of his Lectures, ſays, That all Bodies which ſeem to vegetate, may be generally put into two Claſſes: The firſt, to conſiſt of thoſe which poſſeſs every Character belonging to a Plant; and the other, to be made up of thoſe which ſeem leſs perfect, and are ſuppos'd to want ſome Part or other which one ought to expect in a Plant. Among the latter, ſome are ſeemingly without Flowers, as the Fig-Tree; which, however, ſome believe carries its Flowers within the Fruit. Others are ſeemingly without either Flowers or Seeds; as the moſt Part of the Marine Plants; for tho' there are diſcover'd ſomething like Seeds lying in particular Cells of many of the Sea Plants, yet it is a Doubt whether they are really Seeds or not. Again, there are others which are compoſed of Leaves without Stalks, or other apparent Parts belonging to a Plant, as the *Lactuca Marina*, or Sea Lettuce, which is often found growing upon Oyſter Shells. Others have Stems or Stalks without Leaves, as the Euphorbium, Corals, and the Lythophyton, and moſt of the Stony Plants. Others again, one may ſay, carry no Face of a Plant, becauſe one cannot diſtinguiſh in them either Leaves, Flowers, or Seed. Of this Gender are the moſt Parts of the Muſhrooms, Sponges, and Morilles; but above all the Truffles, which even ſeem to be without Roots. The Botaniſts, however, range them among Plants, becauſe they have a Mode of Growth, and Power of increaſing, not doubting but they likewiſe contain the eſſential Parts of Plants, tho' they have not the apparent Parts. As it is in Inſects, which have the eſſential Parts of an Animal, tho' the apparent Structure is different: But the Truffle is of that ſingular Structure, that it well deſerves our moſt careful Examination.

This Sort of Plant is a Kind of fleſhy Tubercle, cover'd with an hard ſhagreen'd Coat, knotted or bunch'd on its Superfices ſomewhat regularly, reſembling very much the Cone or Nut of the Cypreſs Tree, which is commonly call'd in *England* the Cypreſs Apple. It is remarkable,

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In the Beginning of their Growth they appear round, like ſmall Peas, reddiſh on the Outſide, and white within; theſe grow gently to Perfection, and attain to a greater Bigneſs as the Soil is agreeable to them. Early in the Spring we begin to find thoſe which are call'd White Truffles, which are, indeed, inſipid of themſelves; but are generally dry'd to be uſed in high Sauces, becauſe they keep better dry than thoſe that are Marbled. It is the common Opinion, that a Truffle once diſplaced, will never grow or receive any Nouriſhment afterwards, tho' we put it again in the ſame Place from whence we remov'd it; but if we let them grow to a certain State without diſplacing them, then they will inſenſibly grow bigger, and their Coat or Covering will become black, and ſhagreen'd or unequal, tho' they ſtill retain their Whiteneſs within. To this Point of Ripeneſs they have very little Smell or Flavour; for which Reaſon they are not yet fit for any thing more than to put in Sauces; and theſe are of that Sort which are call'd Abroad, the firſt white Truffles, but ought not to diſtinguiſh as a different Kind from the marbled, or the black Truffles, which are gather'd from the End of Summer till the Severity of the Winter, becauſe they are no more of the ſame Sort, only in different Degrees of Ripeneſs. We ſhall conſider the white Truffle in the firſt State, as if it were a Plant, that contains at the ſame Time the Root, Stalk, and Fruit, which, by inſenſible Swellings, open and dilate the Parenchima, or outward Coat. As the Truffle ſwells, ſo the Coat or Covering hardens and chaps in ſeveral Places,

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to be obſerv'd, that if we do not happen to gather the Truffles juſt when they are at their full Point of Ripeneſs, they preſently rot; and it is then we may remark the Re-production of them, for in a ſhort Space after that, we may find ſeveral Heaps of little Truffles ſupplying the Places of the rotted Truffles: Theſe young ones feed and grow 'till the firſt cold Weather; and then, if the Froſts are not too violent, they hold the Winter, and come to be what are call'd white Truffles early in the Spring.

Monſieur *Geoffroy* tells us, that the great Froſt in 1709 either deſtroy'd, or kept back the Growth of the young Truffles, for that there were not any found 'till the Autumn following; but that the Year after, they were in great Plenty at the common Seaſons. It has not yet been diſcover'd that they have any Root, or the leaſt Fibre, to take hold of the Ground, but they are ſo tightly inclos'd by the Earth, that they imprint the Figure of their Coat in it; they are ſubject, like moſt Roots, to be attack'd by Inſects; the Worm which frequently eats into the Truffle is white, and very ſmall and thin, and is different from thoſe which we find in the putrify'd Truffles; the little white Worm I ſpeak of, when it has eat its Way into the Truffle, lays itſelf up in a Chryſalis cover'd with a delicate wrought Neſt or Bag of white Silk, and afterwards changes into a blue Fly, which eſcapes from its Neſt thro' the Cracks which are obſervable in the Truffle Beds: So that where we ſee this Sort of Fly, we may look upon it as a certain Sign of Truffles growing in the ſame Place.

When we happen to dreſs a Worm-eaten Truffle, it diſcovers itſelf in being bitter to the Taſte, and, upon Examination, one may diſcover the Part which is wounded by the Inſect to be blacker than the reſt of the Truffle, and that it is only the wounded Part which is bitter, while the other Part of the Truffle preſerves its fine Flavour. And if we open one of the worm-eaten Truffles, when it is raw at the wounded Place, we may eaſily diſcover the Neſt of the Inſect, with a Space about it without any Marbling, and of a different Colour from the reſt of the Truffle, ſomewhat tending to the Colour of rotten Wood. In obſerving the white Specks upon the Superfices of the Truffle with a Miſcroſcope, one may diſcover them to be ſmall Inſects which feed upon it; tracing along the Channels in the Bark, theſe Inſects are white and tranſparent, of a roundiſh Figure, ſomewhat like Cheeſe Mites. This Inſect has only four Legs and a very ſmall Head, in Proportion to the Bigneſs of its Body, and is pretty nimble. Theſe are ſometimes found in the abandon'd Cells of the Flies, and then change from their Whiteneſs and Tranſparency to a Coffee Colour.

It is to be obſerv'd, that no Herb or Plant is ever ſeen to grow upon a Truffiery, or Truffle-Bed, which, perhaps, may either be becauſe the Truffles rob the Ground of all vegetable Nouriſhment; or elſe, as ſome imagine, it may happen from the Scent of the Truffles, which will not ſuffer Plants to live near them; I mean ſuch Plants as are of the Under Race, which draw their Nouriſhment chiefly from three or four Inches Depth of Earth, but Trees draw their

Nouriſhment ſeveral Foot deep, and ſo cannot be injur'd by the Truffle, if the firſt Conjecture be right; but if it be from the latter, as ſome are of Opinion, becauſe the very Earth where Truffles grow, has a ſtrong Scent of Truffles in it; it may be, that that Scent is poyſonous to Plants of the inferior Claſs. In *France*, the Country People, by Obſervations of this Kind, are ſo expert in the Diſcovery of the Truffleries, that they are ſeldom diſappointed. They know the Extent of a Truffle-Bed, by obſerving that no Herb grows upon it, or that the Earth is ſuperficially void of Plants, and in the next Place, by the Cracking or Chapping of the Ground, by the Degree of Tenacity which it has, and by the blue Flies which are already mention'd; as alſo by a Kind of long black Fly, which is engender'd at the rotting of the Truffles. This laſt Kind of Fly is very different, as well in Colour as in Shape, from the other Sort, and ſomewhat reſembling thoſe Flies which we generally find about putrify'd Bodies.

The *French* and *Italian* Peaſants are very artful in gathering the Truffles without cutting them, eſpecially if they are large; on this Occaſion, the beſt Inſtrument I have ſeen is a Stick like a Dibble, where the Point is not too ſharp, or pointed; this Inſtrument being generally blunt and ſmooth on the Sides, there will be little Danger of breaking the Truffles, becauſe, upon opening the Surface of the Earth, the lower Parts will give Way, and the Truffles, by that Means, be turn'd up whole and entire; but then, if by diſturbing the Earth, and removing the Truffles from their firſt Place, they will not grow again, we may ſuppoſe all the young ones will be deſtroy'd, perhaps for the Sake of *one* Truffle that we take up; but we are certain of the contrary, becauſe of the long laſting of a Trufflery, which, tho' frequently diſturb'd by the Gathering of the Truffles, yet continues to bring freſh Parcels every Year. I have already taken Notice in my *New Improvements* of the Manner of hunting for Truffles with an Hog in a String, which Method is often us'd Abroad, as well as ſearching for them with a Dog that has been train'd to the Sport; but I ſhall ſpeak of the Method of teaching the Dog in another Place.

Mr. *Townſhend*, whom I have before mention'd, tells me, that at my Lord *Cullen*'s in *Northamptonſhire*, beſide the Woods and Places under Hedges, where he us'd to find the Truffles, they were alſo found in a Grove; but that the Trees in that Grove happen'd to be cut down, and they were no more diſcover'd in that Place, for they do not proſper when the Trufflery comes to be expos'd to a full Sun; for the Truffle, like other ſpungy Bodies, being expos'd to the Sun, will ſhrink and dry up, when on the other Hand, a moiſt Air will make them ſwell. But it is not only at my Lord *Cullen*'s in *Northamptonſhire* where the Truffles are found; they are frequent in moſt of our Woods, but have been over-look'd: The Hogs, indeed, fare the better for them, at the Time when they are turn'd out to feed upon Acorns, and the Maſt of other Trees. I have found them in *Leiceſterſhire*, in ſome Woods by *Wetherby* in *Yorkſhire*, and in *Hampſhire*, likewiſe in a Coppice and Wood by the Place call'd *Wormwood-Common* by *Acton*, as alſo on *Epping-Foreſt* in *Eſſex*; and I am credibly inform'd, that there were ſome found in his Royal Highneſs's Park at *Richmond*; but what was remarkable in them is, that Dr. *Sagerdhall*, his Majeſty's Phyſician, told me, they had ſomething of the Scent of Garlick; but, indeed, conſidering how much the Ground thereabouts is over-run with what is call'd Crow Garlick, I do not much wonder at it, for where this Kind of Garlick grows, one may, in a very hot Day, even diſtinguiſh the Scent of it in the Air, as I have found frequently: And it is no Wonder, if a Body ſo ſpungy as the Truffle, ſhould imbibe from the Earth near which the Garlick grows, ſome Share of the Garlick Flavour. Theſe laſt Truffles, I am inform'd, were diſcover'd by a Dog that had been train'd for the Sport.

I come, in the next Place, to enquire, whether there be more than one Sort of Truffle. Mr. *Tournefort* admits only of two Kinds, which he diſtinguiſhes by their Figure, the firſt is round, which he gives us a Cut of in his Elements of Botany, and is the ſame which *Matthiolus* and moſt of the other Botanical Writers, have mention'd: It is this Sort which I have been ſpeaking of. The ſecond Sort is that which *Mentzelius* calls *Tubera ſubterranea teſticulorum forma*, in his *Pugillus rariorum plantarum*. This Truffle differs from the other in its Figure, and in the Colour of its Fleſh, which, according to that Author, is reddiſh, here and there interſpers'd with green; but perhaps this Kind, if it had been examin'd at different Seaſons, might have been of different Colours as well as the firſt Sort, which, in ſeveral Seaſons, is of ſeveral Colours. *Mentzelius* diſcover'd this Kind in the Months of *Auguſt* and *September*, which is the Time when

Truffles are unripe. Upon this Foot we have but two Sorts which differ in their exterior Make; for we ſhould not ſuppoſe, that the Difference in Colour only in the fleſhy Parts, is ſufficient to make Variety of Kinds, ſince what I have ſaid, ſhews us, that a Truffle at different Seaſons will be of different Colours; neither ought the different Sizes of Truffles to paſs for Characters ſufficient to make them of different Species, becauſe they may in the Time of their Growth be obſtructed in their Enlargement by Roots or Stones, or otherwiſe, or in ſome Soils may grow much larger than in others.

*Pliny* tells us, that in the Iſland of *Leſbos*, at a Place call'd *Metelinum*, there were good Truffles; but that they were only found there after the overflowing of the Rivers, which he imagin'd brought the Seeds of them from a Town in *Aſia*, call'd *Tiares*, where the Truffle uſed to be found in great Abundance; but as the Overflux of the Rivers in many Places are almoſt conſtant in Point of Time, as that of the River *Nile*, it might be that Truffles were about ſuch Times in their full Perfection, and were not otherwiſe known to the People but when they were ripe, or elſe the Overflux of the Rivers might, by moiſtening the Ground, occaſion the young Off-ſpring to ſwell, which otherwiſe, for want of Moiſture, might perhaps have never ſtirr'd or encreas'd in Bigneſs: But I do not make this Obſervation to inſinuate that Truffles have no Seed, for I am of a contrary Opinion; for in the forgoing Obſervations, it ſeems reaſonable to ſuppoſe they have Seeds, or elſe from the rotten Truffles, which I have mention'd, there could not come ſuch Numbers of young ones as are to be obſerv'd in every

Truffiery. This Reproduction is a Confirmation that there are Seeds in a Truffle which are incloſed in the fleſhy Part, as above related; but that it is only in thoſe Truffles which are perfectly ripe and near Rottenneſs, that we ought to expect them fit for Action. Again, one may obſerve here, as I have done in other Caſes which I have mention'd, concerning the Vegetation of Seeds, that they are greatly help'd in their Growth, if they are put in the Earth with their Pulp about them; which Advantage the Truffle has conſtantly. What we ſuppoſe to be the Seed of the Truffle, is already related, *i. e.* the little black Specks which are obſerv'd in the greyiſh Part of the Marbling; but theſe Seeds are not remarkable before the Truffle is ripe, and then, like ripe Fruits, it emits an agreeable Odour; and remaining for a little while in the State of Perfection, it tends to Rottenneſs, which occaſions the Seeds in it to grow. It is obſervable, that when many ripe Truffles together are inclos'd in a Veſſel well ſtopp'd, they will ferment to ſuch a Degree, as to yield a Scent almoſt like Muſk, and then they ſoon begin to turn mouldy and viſcous. In the Gathering of Truffles for keeping, it ought to be done in dry Weather, and then every Truffle ſhould be kept ſingle, as one would keep our choiceſt Fruit: And it has likewiſe been practis'd with good Succeſs to put them in Oil; by which Means they will remain good a long Time, for the Oil ſtops the Pores in the exterior Parts, and prevents the Fermentation. We may find theſe preſerv'd in Oil at the Oil Shops, and they are little inferior to the freſh ones when they are ſtew'd; but the dry'd Sort, which I mention'd before, being made of the unripe Truffles, have no Flavour but what is given them by the Sauces, and in my

Opinion, are not worth the Trouble of Dreſſing, notwithſtanding they are ſold for Twenty, and ſometimes for thirty Shillings *per* Pound; but I ſuppoſe ſhortly the freſh Truffles will be ſo well known in *England*, that the dry ones will be eſteem'd of little Worth. The Country People in *France* pretend, that the Truffle is much better after the firſt ſhort Froſts, than before them, which is reaſonable enough, conſidering the Cold puts a Stop to their high Fermentation; for it is to be remark'd, that when the Fermentation is very high, it rather affords the muſky Flavour, than ſuch an one as would invite us to eat; and beſides, as ſuch Fermentation is ſuppreſs'd by the Cold, the Truffles will keep longer. Thoſe who preſerve them, either keep them in Sand or in Earth, according as they want more or leſs Moiſture. If they want Moiſture they will ſhrink, and then the Earth is beſt for them; but if they keep themſelves full and plump, then Sand is the beſt.

But I come now to lay down ſuch Rules as are neceſſary to be obſerv'd in the Culture of the Truffle, which may be very eaſily done, where there are Woods or Coppices of Oak or Hazle, and where the Soil is not too ſtiff, or inclining to Chalk. It may be remember'd, that I have mention'd the Sort of Earth which is commonly found in the Trufflery, and there is no doubt but that Sort will be always the beſt for our Deſign, if we can have it, eſpecially if it has lain long uncultivated. When we are thus provided of the proper Soil, we muſt be ſure to let it lye undiſturb'd till we are ready to plant, which will be in the Months of *October*, *November*, and *December*, if the Weather be open, for then the

Truffles are to be found in their full Ripeneſs and then likewiſe one may find them in a State of Putrifaction, which is the Time when the Seeds are prepar'd for Vegetation; 'tis in this laſt State that one ought to gather Truffles for planting, or at leaſt they ſhould be in perfect Ripeneſs. It has been prov'd, that a ripe Truffle has been kept in Water ſix Months before it rotted, and the outward Coat or Skin was then in a good and ſound State, I mention this, becauſe it will be no bad Inſtance to prove the Method I recommend to be good.

The proper Soil, and theſe rotten Truffles, being found, we may begin our Work as follows: Open a Spot of Ground of a convenient Space, and take out the Earth about eight Inches deep, and ſkreen it, that it may be as fine as poſſible; then lay about two or three Inches thick of this fine Earth at the Bottom of the Trench or open Ground, and upon it lay ſome of the over-ripe Truffles about a Foot and a half Diſtance from one another; and, as ſoon as poſſible, prepare a thin Mud, made of the ſkreen'd Earth and Water well ſtirr'd and mixt together, and pour it on the Truffles till the open'd Ground is quite fill'd up; by this Means, in a few Hours, the Ground will be as cloſe ſettled about the Truffles, as if it had never been dug or diſturb'd at all, and you may expect a good Crop in due Time, you muſt, however, take Care to chuſe your Spots of Ground in Woods or Coppices, or ſuch Places as are ſhaded with Trees. At a Seat of his Grace the Duke of *Mountague* in *Northamptonſhire*, called *Newton*, the Truffle has been found in a Philberd Walk, where the Philberds met at the Top, and the Ground below was moſſy; and at *Ruſhton* in *Nor-*

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among Hedges, and I look

Seat of the Lord *Crew*'s, Biſhop of *Durham*, and now in the Poſſeſſion of his Grace the Duke of *Kent*, and I am fully perſuaded there are Truffles in the ſame Wood; for I obſerv'd, at the ſame Time, large bare Spots of Ground in ſeveral Parts among the Trees, which ſignify ſo many Truffleries, according to what I have before related; but tho' I had not then an Opportunity of examining them, I am perſuaded they may yet be found there if they are ſought for.

But to return to the Morille or Morill, as it is commonly call'd in *England*: It has been found growing in the Woods and Groves at *Ruſhton*, which I have mention'd before, in *Northamptonſhire*; and I am apt to think, that they might be found alſo at *Newton*, if they were ſought for, and, I ſuppoſe, likewiſe at the Lord *Hatton*'s in the ſame County, where, I am inform'd, there have been Truffles found; the Morille is alſo very commonly brought to *New-market* about the Spring Horſe Races. This has about its Roots or Bottoms, ſuch white Strings as are found about the Roots of Muſhrooms, branching themſelves in the Earth, which is well clos'd about them: This Earth, which may be gathered where we find the Morille, may be remov'd in Lumps from one Place to another; but there muſt be Care taken to ſet it in ſuch a Part of a Wood or Grove, as that was where it was taken from, and that we bury it as deep as it was before, at the ſame Time preſſing the Earth about them, and giving the new planted Ground as much Water as it will receive, even ſo as to waſh it into a Mud, if poſſible: And thus let your new Plantation remain till the Spring following, at which Time you may expect to ſee the Produce of your Labours; for I don't find theſe ever appear but in *April*, and there ſeems to be no Poſſibility of forcing them out of their Seaſon by Dung, becauſe the Foundation of the Ground where they grow, muſt be ſolid, and they muſt have ſome Shelter from the Sun, as our finding them always in Woods ſeems to denote. This Removal of the Earth with the white Strings in it, is the ſame as we do in the Raiſing of Muſhrooms; but I make it a Doubt, whether the ſtringy Earth of the Morilles will hold good for ſix or eight Months in a dry Room, as the ſtringy Earth of the Muſhrooms will do; but it may do ſo for ought I know, and where we have Plenty of Morilles we may try it, by gathering or collecting it in dry Weather, and laying it in ſuch a Room as may ſhelter it from the Rain, and at the ſame Time admit the Air till it is quite dry; and, after that, to keep it in a dry Room, but without a Fire till we uſe it. In my Chapter of the Muſhroom, it happen'd by ſome Accident that the Uſe of ſuch Earth with the white Strings chanc'd to be omitted, and ſince I publiſh'd that Book, I have had ſo much Experience in the Growth and Culture of the Muſhroom, that I believe it will not be diſpleaſing to my Readers to give them a farther Account of the Matter: I have mention'd, indeed, a Way of making of Muſhroom-Beds; but I have ſince ſeen and conſider'd thoſe excellent ones in *France*, which produce Muſhrooms all the Year about, and am therefore at preſent more capable of giving Inſtructions upon that Head than I was before. I have in my New Improvements given an Account of the Figure of the Muſhroom-Bed, that it ſhould be made ridged on the Top like an

Aſs's Back, or lye ſloping like the Ridge of an Houſe, which is neceſſary if there ſhould happen very great Rains; for by this Faſhion of the Bed the Rains will run off the eaſier, and the Bed will lye much dryer than if it was to lye flat. And this ought chiefly to be conſider'd in the raiſing of Muſhrooms, that our Bed ſhould lye dry, becauſe the white Fibres or Strings which are found in the Muſhroom Earth, are very ſubject to rot by much Moiſture, and then our Crop will come to nothing. The *French* Method of making Muſhroom-Beds is, to prepare a Parcel of Horſe-Dung, or the Dung of Aſſes and Mules, and after it is well clear'd from the Straw or Litter, let it be toſs'd up in an Heap in a dry Place, to remain for fifteen Days; then mark out your Beds, each about three Foot wide at the Bottom, and of any Length: The Beds ſhould run parallel with one another, leaving narrow Paths between them; eſpecially when we make Beds for Winter Uſe, many of them ſhould be made together, for the greater the Body of Dung is, the longer the Beds will remain warm, and they will be the longer productive. Before we begin to lay on the Dung, we muſt at each Corner of the Beds ſet in Sticks, and making them meet at the Tops, tye them together, ſo that the two Sticks at each End of the Bed, and the Ground which makes the Baſe, form an Equilateral Triangle; theſe ſerve as Guides to work the Bed by, as may be ſeen in the Figure, where A ſhews the Sticks, and B B the Height we ought to raiſe the Bed at the firſt making. In the laying the Dung for the Bed, it muſt be beat and preſs'd very cloſe with a Fork, working the Sides ſlopewiſe, as the Sticks B B direct; when we have raiſed the Beds half their Height, cover them with looſe Litter from the Stable, *and ſo* let them remain for fifteen Days: As ſoon as this firſt Part of the Bed is made, toſs up a freſh Parcel of Dung as before, and at fifteen Days end finiſh the Bed, by working on the Dung as I have directed before, and then preſently cover the Sides of the Beds with fine light Earth an Inch thick, beat a little down with a Spade; and then break ſome of your Muſhroom Earth, with the white Strings in it, into ſmall Pieces, and ſtick them into the Earth on all Sides of the Bed; or if the Muſhroom Earth happens to be broken to Powder, we may ſprinkle it among the Mould that we lay on the Side; then toſs up looſely ſome warm Litter from the Stable, and cover your Beds with it about eight or ten Inches thick, and ſprinkle it pretty well with Water. Theſe Directions being well obſerv'd, the Beds will begin to work in about a Fortnight's Time, and you may then gather Muſhrooms every Day in great Plenty. We may ſee the Form of a Bed full made at A 2; this ſhould be very exactly imitated, for I have known ſeveral Beds have fail'd, or have not brought half a Crop, when they have been made round or flat at the Tops. When you make Beds for Summer uſe, dig Trenches for them about ten Inches deep in the Ground. When the Litter grows cold, get freſh from the Stable; I have known ſome that have us'd clean Straw inſtead of Litter, but their Beds were often idle. Theſe Beds, with good Management, will continue to bear Muſhrooms indifferently for ſeveral Years. Thus I ſhall leave the Culture of the Truffle, Morille, and Muſhroom, to the curious in Gardens to be put in Practice.

But I cannot leave this Subject, without acquainting my Reader of the Method which is generally us'd in teaching of Dogs to hunt for Truffles. The beſt Sort of Dog for this Uſe is the *Spaniſh* Pointer, but a common Spaniel will do, if he be taught while he is very young. This muſt be done at the Seaſon when the Truffles are ripe, by carrying him faſting every Morning to a Trufflery, and giving him a Truffle to eat after the outward Coat is par'd off; and then feeding him with ſome Meat, or other Thing which ſhould be carry'd out on Purpoſe for him; but eſpecially let him ſee you take the Truffle out of the Earth, and even the other Meat likewiſe, and you will ſoon find that he will be brought to your Purpoſe, ſo that no Trufflery can eſcape him; but then, when he is once taugh his Leſſon, he muſt be carefully ty'd up, or elſe he will deſtroy more than he will gain you. The Expence of Truffles, perhaps, in teaching him, may be two or three Pounds, but what he will then diſcover will ſoon anſwer his Learning.

Since I wrote the above Account of the Truffles, I have met with a Letter in the *Philoſophical Tranſactions*, written by Dr. *Tankred Robinſon*, wherein that worthy Gentleman acquaints us, that Mr. *Hatton* firſt diſcover'd the Truffle at *Ruſhton*, *Anno* 1693; that they are moſt tender in the Spring, tho' after Showers and ſultry Weather, they may be plentifully found in the Autumn; but, in a particular Manner, it is related in that Letter, that Mr. *Hatton* obſerv'd Fibres at them, which he gives a Figure of, and I have copy'd from him, and added to my Figure, Plate

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## *Of the Situation*

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the Value of a good Flower, nor the Advantage which may ariſe from a good Experiment.

This Piece of Ground ſhould, if poſſible, lye near the Green-Houſe, becauſe it may ſerve to ſet our exotick Plants in, after our principal Show of Flowers is over; and beſides, all our Rarities will be there together, and the Gardener will more readily take Care of them, than if our Curioſities were ſtraggling in different Parts of the Garden. This Garden ought to be diſpos'd in Beds, for the Reception of our fine bulbous Roots, and our Seedlings of Auricula's, Polyanthos, and the Seedlings of bulbous Flowers: The whole ſhould conſiſt of a light Soil; even the Alleys ſhould be regarded as well as the Beds; for a noiſome Vapour coming from the Alleys, may undo all our Care in the Preparation of our Beds. If we are ſituate upon a Clay, we muſt by all means avoid digging into it, but lay a good Quantity of light Soil upon it, as well where our Alleys are to be, as where we deſign our Borders; what I call a good Quantity, is half a Yard thick, if it can be done, and the beſt Part of it ſkreen'd. When this is done, I think Edgings of Box are preferable to Border-Boards; for Box is continually increaſing in Value, while Border-Boards are decaying.

## *Remarks on the Guernſey-Lilly.*

AS the *Guernſey* Lilly is eſteem'd one of the moſt beautiful Flowers of the Garden, and is now ſo much in Requeſt, that it is daily ſought

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I have thought fit to enlarge
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Ground; and that the blowing Roots remain always longer without ſhooting than the Leaf Root: The Leaf Roots generally put out their Leaves a Fortnight ſooner than the flowering Roots produce any Thing; and it is alſo to be obſerved that the common Remark which we have hitherto look'd upon as a Rule for diſtinguiſhing blowing Roots, *viz.* the bringing of ſix Leaves the Year before Bloſſoming, is not to be any longer look'd upon as infallible, for this Year has plainly demonſtrated the contrary in many Places; however, we muſt have ſo muſt Regard to the ſix-leav'd Roots, that we may reaſonably conjecture, that they are in good Strength, and it has been obſerv'd that they have bloſſom'd the Year after they have ſhewn ſix Leaves; but my Obſervations this Year and the laſt, ſatisfy me that it is doubtful; but we may add, that the Roots which bring only two or four Leaves, are certainly too weak to flower; and there is one Thing more which I cannot help taking Notice of, which relates to this Plant's firſt coming into the Iſland of *Guernſey*, which was told me by M. *de St. Marets*, a very curious Gentleman of that Place: He ſays, That in his Grandfather's Time a Ship from *China* came in there, when ſome of the Sailors gave a Parcel of theſe Roots to a Perſon who then kept a publick Houſe; This Gentleman tells me, that from thence came the whole Stock that is in the Iſland, and that the Place is now in Being, cloſe by the Sea. This Story differs, indeed, from that which we have had of a Ship's being caſt away, and the Roots ſwimming to the Shore and there taking Root; but I think this traditional Account of Mr. *de St. Marets* is the moſt probable of the two. It is remarkable, that the Soil which came with Mr.

*Sutton*'s Roots, was a ſandy Loam mixt with Sea Sand and broken Shells. From the whole we may learn, that the Bulbs ſhould not be put in the Earth above half their Height. Again as to the Soil, we are taught to give this Root a free open Earth. I may take Notice here, that the Height of the Flower Stem, if the Plant ſtands in the open Air, will be about a Foot, and if it happens to be ſet in a Room, or in a Glaſs Caſe, or Stove, where the Air does not reach it with Freedom, it will ſometimes be near two Foot high; but then it will be weak, and the Colour of the Flowers will be paler when it is confin'd, than when it has the free Air.

## *Of the extraordinary Vegetation of the Chadock Orange, whereby the Neceſſity of Ripening Juices in Plants, to make them fruitful, is conſider'd.*

I Have taken Notice in this and my other Writings, that while the Juices of Plants are green or undigeſted, ſuch Plants ſhoot vigorouſly into large Branches without any Shew of bearing Fruit; but, on the contrary, when the Sap of a Plant becomes more ripen'd and ſedate, that Plant will produce ſmaller Shoots, which will ſet for Blowing or Fruit-bearing. As to the Conſiſtency of the Juices in the vigorous ſhooting Plants, and in the ſlow Shooters, or thoſe which are come to Fruit-bearing, it is in the firſt like the moſt fluent Liquid in Compariſon to the ſecond, which is more dence or thick, as if it had Gum mix'd with it; when, therefore, we obſerve vigorous growing Plants, and the Reverſe of them, we may know that the Juices which are neceſſary for the good nouriſhing of a Plant, muſt be thin and watry, and the Juices requir'd to render a Plant fruitful, muſt be of a leſs active Nature. I am the more particular on this Head, becauſe it is impoſſible for any one to prune a Tree with any tolerable Succeſs, unleſs he has regard to theſe Conſiderations. This, however muſt be always conſider'd with my Doctrine of the Circulation or Sap in Plants, whereby it appears, that when any one Particle of Sap happens by extraordinary Heat to be forwarded in its Motion, every Particle of Sap contain'd in the Veſſels of the ſame Plant, will alſo be quicken'd and become more lively; ſo that the Juices in the whole Plant will move alike in every Part. Inſtances of which we find in the Trees planted againſt my late invented Firewalls, and the Pales which I have directed for forwarding the Ripening of Fruits by the Heat of Horſe-Dung, in both which Caſes the Trees that are nail'd to them will begin to ſprout in two or three Days after the Application of the Fire or the Dung, at ſuch Places, or in ſuch Branches as happen firſt to receive the Heat, altho' they were before in their State of Reſt, as I call it, that is, when their Juices are leſs active by the Rigour of the Winter Seaſon, ſuch as the Blood in thoſe Animal Bodies which ſleep all the Winter; and theſe Animals alſo, like the Plants I mention, while they are in their moſt ſolemn ſleep, will awake and recover their vigorous Motion, if we bring them before the Fire: In which Caſe, tho' the Rays or Points of Heat do not every where equally ſal upon the Object,.yet one Part of the Animal being ſufficiently warm'd, and the Juices in that Part made more active than the reſt, by Means of the Contact between Part and Part, will alſo be render'd as fluent as the firſt. So, I ſay, when one Bud of a Plant, by extaordinary Heat is made to germinate, the whole Body of Juices in the ſame Plant, muſt conſequently become as active as the Juices in the firſt Germinating Bud. So the Circulation of Juices in Plants may beſt be underſtood by comparing it with the Circulation of Blood in Animals: In which it is to be remark'd, that the Circulation is ſometimes quicker, and ſometimes ſlower, according as the Plants or Animals are influenc'd more or leſs by Heat; and that there muſt be ſome Degree of Circulation continually in Plants and Animals is certain, as Life in either cannot be maintain'd without it; for as ſoon as the Juices ceaſe to move, ſo ſoon does the Body that contains them, tend to Putrifaction: But however the Juices in Plants are thicken'd by the Winter's Cold; yet we have many Inſtances which prove that they do not lye ſtill at that Time, as may be obſerv'd in ſuch Evergreen Plants as are graffed upon thoſe which drop their Leaves in the Winter, and ſhoot even in the moſt ſevere Weather.

But we muſt take Notice in the next Place, that there is a Difference between the Juices in Plants which are thicken'd by Cold, and thoſe which are digeſted and thicken'd by Heat; but yet neither of theſe Kinds of Juices, either by the moſt extreme Heat or Cold of our

Climate, provided they are reſiding in natural Plants of our own Country, are ſubject to become fixt or incapable of acting and circulating in their reſpective Bodies; tho' Plants from the hotteſt and the very coldeſt Climates, when they are cultivated in our Latitude, are ſubject to have their Juices quite fixt, either by the too great Cold, or too great Heat of our Climate, and in that State periſh; for whenever the Juices become perfectly fixt in any Plant, 'tis without Recovery; but to prevent this in the Exotick Plants which we cultivate, it is neceſſary to provide Green-Houſes or Stoves for the better defending the moſt tender Sorts from the Severity of our Winter Weather, and to provide likewiſe a neceſſary Defence for ſuch Plants as come from the coldeſt Countries, that their Juices may not be too much thicken'd by the too great Heat of our Summers. To ſhew the Poſſibility of fixing fluid Bodies by Heat, the White of an Egg, which is viſcous, is an Example; and of rendring ſuch Bodies as conſiſt of oily or watry Parts more fluid, it is done by Heat; I mean ſuch as Bees-Wax, Oil, *&c.* which are fixt by Cold, and made fluent by Heat.

This being premis'd, I ſhall proceed to give an Account of an extraordinary Phænomenon in the Chadock Orange, which I obſerv'd this Year at Mr. *Whitmill's*, which may ſerve to prove what I have ſaid above concerning the Difference between the Juices which make a Plant ſhoot vigorouſly, and thoſe which are proper to render a Plant fruitful. About the beginning of *April* Mr. *Whitmill* receiv'd ſeveral Fruits of the Chadock Orange from *Barbadoes*, ſome in a State of Ripeneſs fit for eating, and others that were rotting, which, however, were not uſeleſs to him, becauſe of the Seeds which were ſtill fit for planting. Theſe Seeds, as well as the others in the ſound Fruit, he ſets in Pots in *April*, and the *July* following ſeveral of them began to ſhew Bloſſoms on their Tops, which explain'd themſelves in *Auguſt*: This Novelty put me upon a particular Enquiry, whether theſe flowering Plants were raiſed from the Seeds of the eatable Fruits, or the rotten Fruits; which fortunately Mr. *Whitmill* remember'd, and in a particular Manner obſerv'd to me, that they were taken from a Fruit which was ſo rotten, that its Contents were almoſt turn'd to Water: In the mean while it was obſervable, that the Plants whereon theſe Bloſſoms appear'd, were not near ſo vigorous as thoſe Plants which were rais'd from the Seeds of the leſs rotten Fruit: This occaſion'd me to make the following Remarks, *viz.* That, according to my former Obſervations, when the Juices of a Plant are well digeſted, its vigorous Growth is reſtrain'd, as appears by the blowing Plants that were rais'd from the Seeds of the very rotten Fruit, and were already in a State of Germination before they were planted, as it is common to obſerve Seeds already ſprouted when we open rotten Lemons; I ſay, when Seeds happen to be thus ſet in Motion while they are in the Fruit, and receive their firſt Impreſſion from full ripe or digeſted Juices in the rotten Fruit, then it muſt be of Neceſſity that the Plants riſing from ſuch Seeds muſt immediately come to bearing; while, on the other Hand, ſuch Seeds as are taken from a ripe, or even a rotten Fruit, and that have not ſprouted in the Fruit, but receive their firſt Nouriſhment from the Juices of the Earth, ſuch Plants will ſhoot vigorouſly by the Nouriſhment of the raw Juices, and the more vigorouſly they are made to ſhoot, ſo much longer Time they will require for the digeſting of their Juices, or coming to a Fruit-bearing State; but then it ſeems reaſonable to conjecture, that when the vigorous Growth of a Plant begins with its firſt Germination, it will be more likely to endure and be laſting, than ſuch a Plant as, at the firſt ſetting out, is fed only with fully digeſted Juices, and comes to bear Fruit before its natural Period. But it ſeems it is not only at Mr. *Whitmill*'s, that this extraordinary Accident has happen'd, for I am credibly inform'd, that the ſame Thing was obſerv'd in Dr. *Monroe*'s Garden at *Greenwich* ſome Years ago.

Here it will be neceſſary to offer a Word or two concerning the Ear-leaves, or the Lobes in a Seed, and their Functions, to prevent any Objection to the Doctrine I have laid down, when I cannot be preſent to anſwer it myſelf. By the Lobes or Ear-leaves of a Seed, are underſtood the two firſt Leaves that appear of every Plant rais'd from Seed: Theſe, while they are folded up in the Seed, incloſe the Plantula or little Plant, and ſerve to find it Nouriſhment from the Moment it begins to germinate, to the Time that its Roots have ſufficiently taken hold of the Ground to give the Plant Nouriſhment from thence, and then theſe Lobes, being no longer of Uſe, decay and drop off. Now theſe Lobes of the Seed, when they lye in the Fruit, will imbibe ſuch Juices as are fully qualify'd to feed the young Plant, and make the firſt Impreſſion on it what Kind of Juices it ought to draw from the Earth, when it comes to ſhift for itſelf; or in other Terms, theſe Lobes or Ear-leaves give the young Plant its firſt Stamp, which it is oblig'd to follow ever after. Now, in the Caſe of the young flowering Chadock, the Ear-leaves were under a Neceſſity of imbibing ſuch a Share of the digeſted Juices of the rotten Fruit, as overpower'd their natural growing Juices; and ſo, diſtributing of them to the Embrio, or little Plant, at its firſt Germination, it was render'd more ſuddenly productive, than capable of vigorous Growth.

## *Of the Bark-Bed, and of the Ananas or Pine-apple, the Guava, the Coffee-Tree, the Bananas,* &c.

THE Tanners Bark is of great Uſe for making of Hot-beds, and as the Secret of its Management is neceſſary in the Conſervation and Education of all ſuch tender Exoticks as are brought to us from the hotteſt Climates, I ſhall here give the neceſſary Directions for making a Bark-bed.

There muſt firſt be prepared a Place about four Foot wide, and about ten or twelve Foot long, to be inclos'd with Brick-work about three Foot high: This brick'd Part is generally made under Ground, if it can be kept dry; for where Waters lye near the Surface, they occaſion the Bark to burn, as often as they come to it; and ſo when the Waters riſe near the Surface, we muſt make our Brick-work above Ground.

Upon the Top of the Walling may be ſet a common Hot-bed Frame, or a Frame of the ſame Nature, four or five Foot high at the Back, according to the Height of the Plants we are to ſet in it.

If we make the Frame of any conſiderable Height then it is adviſeable to make the fore Part, or Front of the Frame of Glaſs in Pannels, to be taken out when it is neceſſary to give the Bed Air in wet Weather, when the Glaſs Lights on the Top cannot properly be open'd; one of which Kind of Frames I directed to be made at *Vaux-Hall*, when I order'd the making of the forcing Frames, for forwarding the Ripening of Fruits; but I ſhall here give a Figure of it, as well as of ſome Stoves which are uſeful for theſe tender Plants in the Winter; for this Frame is deſign'd only as an Help to the moſt tender Plants in the Summer, that is to ſay, when we raiſe Seeds, or elſe, when the Plants are young: We may uſe this Frame from *April* to the Middle of *October*, and then they may be ſet into the Stoves.

I am the more particular on this Account, becauſe I now find that my former Writings concerning Coffee, have brought that Plant to be familiar in our *American* Plantations, I mean in the Iſland of *Barbadoes*, where, at preſent, there is a great Number of Plants in a Fruit-bearing State, from whence ſome have been brought to the Royal Palace at *Hampton-Court*, in a proſperous Condition; and I doubt not but the Plant for its Beauty and Curioſity, will be much coveted by all Lovers of Gardens with us, eſpecially ſince the ſame Expence, in Point of Culture, will ſerve for the Education of all the choice Fruits of the hotteſt Climates.

But there are ſome who are afraid of the Expence of theſe Things, believing they will be a conſiderable Rent-Charge: If the Expence is to be in the Tanner's Bark, every one knows it is much cheaper than common Horſe-Dung, as it will keep a good Heat from *February* to the End of *Auguſt*; and the Fire which is requir'd to be kept in the Stoves, during the Winter, cannot be very conſiderable; one Fruit of the Pine-Apple or Ananas, to be ſold, would pay the Expence; and theſe Conſervatories will keep the Ananas, as well as the Coffee, and the Bananas or Plantains, or the Guavas or Mango; or, indeed, any of the Fruits which grow between the Tropics.

The Green-Houſe, which I have deſcrib'd in the foregoing Work, is of great Uſe; but as it is not in the Power of every one to erect, I think it will be neceſſary to deſcribe ſome Stoves of ſmaller Size, which will be of little Expence; for the Building of which I have given ſufficient Direction to Mr. *George Eaton*, Bricklayer, in *Miles's*-Lane, near the *Monument*, *London*, who has already built many Stoves of extraordinary Uſe, ſome of which I ſhall mention when I explain the Plate Numb. V. and VII.

In the Affair of the Bark-bed it will be neceſſary to obſerve, that the Lights or Glaſſes in the old Way, always had the Bars, to which the Glaſs was faſten'd, within Side; and, in that Manner, were very deſtructive to the Plants that ſtood under them; for the Dew or Steam of the Bed, by being condens'd, when it comes to the Glaſſes, will gather into Drops, and by Means of the Communication between the Bars and Glaſſes, thoſe Drops will fall upon the Plants, and rot them; but to prevent this Diſorder, or the old Practice of turning the Glaſſes of Hot-Beds every Morning, Mr. *Whitmill* now puts all his Bars on the Outſide, leaving a convenient Space for the Rain Water to paſs between them and the Glaſs; and I obſerve, that whatever Dew is condens'd in the Houſe, or Bed, runs gradually down the Glaſs without dropping; ſo that all the Plants which are inclos'd in ſuch Beds, or Stoves, will be out of that Danger which too frequently has deſtroy'd our chiefeſt Curioſities.

In the next Place we come to ſpeak of the Tanner's Bark, and how to uſe it. This Bark is ſuch as the Tanner's have quite done with, and ſhould be had into our Garden ſoon after it is taken out of the Tan-vats, and then toſs'd up to let the Water drain from it, and turn'd once or twice to make the Parts of an equal Moiſture as near as poſſible; for elſe, when we make the Bed, it will work unequally, which is a great Fault; we muſt then ſift or ſkreen our Bark, that it may be of one Fineneſs at the Top, and reſerve the coarſe Part for the Bottom of the Bed. When this is done, we may ſpread a little Rubbiſh at the Bottom of the Caſe of Brick-Work, and ſome freſh long Dung from the Stable to lay upon that, in all to make about a Foot thick when the Dung is preſs'd down. This Preparation is for two Uſes, the firſt is to give a quick Paſſage to the Wet which

the Bark at the Bottom,
when we make the Bed ;
larger, as well as the ſma
will heat, but in differe
larger Parts will be longer
through, and then woul
near a Pot, but will ſerve
to the finer Parts that ſh
and the upper Part of
of the finer Parts, will
and gentle in their Heat
more proper to ſet our
In the laying this Bark i
Work, we muſt be caref
pretty hard till the whol
and then ſet on your F
Glaſſes about a Week
ſoon after come to be fit
but be not too haſty to
leſt the Heat be over-muc
Days after you have ſet
Bark, you may venture to
ſuch a Bed, if it be mad
remain a ſufficient Heat